INSTRUCTION MANUAL

Bluenose

• CANADIAN FISHING SCHOONER 1921 •

MODEL SHIPWAYS
• QUALITY KITS SINCE 1946 •

TECHNICAL CHARACTERISTICS

SCALE: 3/16" = 1'0" (1:64)
Overall length: 32-3/4"
Overall height: 27"
Overall width: 5-1/4"

MODEL SHIPWAYS KIT NO. 2130

By the early 1900s, the fishing schooner had developed into a fast, efficient vessel. American and Canadian schooners were similar in design. Both operated on the Grand Banks off Nova Scotia. They carried 10 or more small dories from which two-man crews fished.

In the days before refrigeration, fishing schooners had to be fast, or their catch would spoil before it reached market. Grand Banks' schooners were divided into two classes: those carrying ice as a preservative and staying out two or three weeks, and the salt bankers that fished until their hulls were full. The latter made two or three trips a season and were hauled out in winter.

In the United States, most schooners' home port was Gloucester, Massachusetts. These became known as Gloucester fishermen, or just Gloucestermen. In Canada, the boats hailed from Nova Scotia.

The Canadian fishing schooner *Bluenose* was designed by William J. Roué and built in 1920-1921 at the Smith and Rhuland Shipyard in Lunenburg, Nova Scotia. Launched 26 March 1921, she was 143 feet long, 112 feet at the waterline, with a beam of 27 feet, and displacement around 280 tons. She was a salt banker, carrying salt in her bins rather than ice.

Bluenose is famous for beating Gloucestermen in the International Fishing Schooner Races. She was twice crowned queen of the Lunenburg fleet, and retains the record of fastest fishing schooner in Canadian history.

Skippers had raced each other for years, but the friendly rivalry took on its international flavor in 1920. H. W. Dennis of the *Halifax Herald* and *Halifax Evening Mail* offered a $4,000 prize and the Dennis Cup to the schooner winning a series of 40-mile races. His motive was to preserve the fishing schooner while stimulating development of faster designs.

The first regatta was won by the Gloucesterman *Esperanto* over the Canadian *Delawanna*. Seeking retribution, Captain Angus Walters formed a Canadian syndicate to recapture the Dennis Cup. This produced *Bluenose*. In 1921, she outsailed *Elsie*, and the following year she bested *Henry Ford*.

During the 1923 regatta, Captain Walters protested that *Columbia* crossed the line ahead of the starting gun. When race officials failed to resolve the issue, Walters became angry and sailed back to Halifax. He returned in 1930 to compete for the Thomas Lipton International Trophy, but lost to *Gertrude L. Thebaud*. In 1931, *Bluenos*e beat *Thebaud* for the Dennis Cup. No more international regattas were held until 1938, and that was the last one. *Bluenose* retained her supremacy over *Thebaud* and kept the Dennis Cup in Canada forever.

Bluenose was sold in 1942 to carry freight in the West Indies. She sank four years later off Haiti.

In 1955, Captain Walters and the *Bluenose* were inducted into the Canadian Sports Hall of Fame.

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INSTRUCTION MANUAL

BLUENOSE

Canadian Fishing Schooner

1921

Model by Bob Evans

MODEL PLANS AND INSTRUCTIONS BY BEN LANKFORD
ASSISTED BY ERIK A.R. RONNBERG, JR.

Model Shipways developed the *Bluenose* kit in 1996. The model is based on several sources. In 1961, John R. Stevens prepared plans for the Fisheries Museum of the Atlantic in Lunenburg, Nova Scotia. He modified Roué's original hull lines to include more forward sheer. This change, made during the construction of *Bluenose*, gave the lower deck more headroom. Stevens' lines were checked against a similar set prepared by the late Howard Chapelle and now in the Smithsonian Institution. Sail plan and spar dimensions are based on Roué's 1922 sail plan and those taken from the ship during her racing career.

Stevens' deck plan was modified to agree with photographs of the ship. Ironwork and other rigging details are based on photographs taken during *Bluenose's* racing and fishing career, and on contemporary fishing schooner practice. Details in a Lunenburg Foundry parts catalog supplemented some photos. The foundry still manufacturers marine equipment.

Drawings are used with permission from the Fisheries Museum of the Atlantic.

Historian and modelbuilder Erik A. R. Ronnberg, Jr., of Rockport, Massachusetts, served as consultant. He provided considerable data from his personal *Bluenose* research papers and photographs. Ronnberg assisted in searching for photo details and reviewed the drawings for technical and historical accuracy. Regarding Model Shipways' development of the *Bluenose* plans, he states:

"*Bluenose* has long been a favorite modeling subject with no sign of her popularity fading. For this reason, one would expect knowledge of the vessel to be extensive and accurate plans available. This was not the case. Changes to the schooner's hull were ignored, while fittings, deck machinery, and rigging hardware were assumed to be just like her New England counterparts.

"Ben Lankford's research and examination of photographs revealed differences in virtually every detail, from how the woodwork was finished to rigging leads. Consequently, Model Shipways' plans show a different *Bluenose*, one that accurately reflects the practices and traditions of her Canadian builders."

Erik A.R. Ronnberg, Jr.

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Before You Begin

Bluenose is a beautiful, interesting ship and makes a splendid model. Assembling the plank-on-bulkhead hull develops an understanding of how real ships are built, while laser-cut parts assure an accurate shape. Although britannia, brass, and wood fittings facilitate construction, many require final finishing prior to installation. This is especially true for the britannia castings and is discussed later.

Take your time building the model. It has a fair amount of detail and small parts. Complete one stage before moving to the next. When things go awry, consider doing them over. A second attempt usually surpasses the first. Practice does make perfect.

Tools needed to start Construction

A. Knives and saws
1. Hobby knife
2. No.11 blades
3. Razor saw or jeweler's saw

B. Files and Planes
1. Set of needle files
2. Small block plane

C. Clamps
1. A few small C-clamps
2. Woodenspring-type clothespins (craft shops have small versions)
3. #16 and #33 rubber bands

D. Carving Tools
Small woodcarving set, or individual gouges and chisels for carving keel rabbets and tapering the stem

E. Sharpening Stone
Keeps tools razor sharp

F. Boring Tools
1. #60 to #80 miniature bits
2. 1/16″, 3/32″, and 1/8″ drills
3. Pin vise

G. Miscellaneous
1. Tack hammer
2. Tweezers (a few)
3. Small fine pointed scissors
4. Miniature pliers
   a. round nose
   b. flat nose
5. Small bench vise
6. Soldering iron or torch
   a. solder
   b. flux
7. Sewing thread for seizing (other rigging in kit)
   a. black
   b. tan
8. Beeswax block (for treating rigging lines)
9. 1/2″ or 3/4″ masking tape
10. Wire cutters (for cutting fine wire and strip metal)

H. Sandpaper
1. Fine and medium grit garnet or#100 to #220 aluminum oxide
2. #400 wet-or-dry sandpaper

I. Finishing
1. Paint Brushes
   a. fine round point for details
   b. 1/4″ to 1/2″ flat square for hull

J. Supplies
1. Paints
2. Primer
3. Stains and varnish
4. White (polyvinyl acetate or PVA) or woodworker's glue (aliphatic resin)
5. Cyanoacrylates (generic name is Super Glue)
6. Five-minute epoxy
7. Wood filler

Note: White or woodworker's glue in yellow or tan will suffice for most of the model. Five-minute epoxy provides extra strength for affixing fittings. Cyanoacrylates, such as Jet, Flash, or Zap, produce quick adhesion. For most applications, the medium viscosity, gap-filling variety is best. The thin type is recommended for filling a narrow crack and tacking bulkheads to the keel or planking to the bulkheads.

How to Work With the Plans & Parts

Before starting the model, carefully examine the kit and study the plans. First, determine if all the listed parts are present. Handling them will produce a better understanding of the kit's requirements. Try to visualize how every piece will look on the completed model. Also, determine ahead of time what must be done first. The instructions will help, but a thorough knowledge of the plans at the outset is essential.

To avoid losing small fittings and hardware, sort them into labeled boxes or compartments. These should have lids to keep out dirt.

1. The Plans

Six Plan Sheets are provided:

1. Laser-Cut Wood Patterns
2. Plank-On-Bulkhead Hull Construction
3. Hull Plan and Profiles
4. Hull and Spar Details
5. Rigging Profile
6. Rigging Details

Sketches throughout the manual illustrate various construction techniques.

The *Bluenose* kit is manufactured to a scale of 3/16″ = 1′0″ (1:64). Each plan sheet is drawn to that scale, except areas enlarged to show detail. Most dimensions can be lifted directly off the plans by using draftsman dividers or a "tick" strip (piece of paper such as an adding machine roll). Lay the paper strip over the plan, carefully mark the item's length with a sharp pencil, then transfer the marks to the wood.

A 3/16″ architect's or 1:64 metric scale is a handy tool. Measuring and cutting parts using the scale gives a better feel for real sizes. Because these are modelbuilders' plans, actual measurements have been converted to the nearest 1/64″. For example, a 7/64″ block is 7″ on the real ship, and a 1/8″ block is 8″. A 3/16″ architect's or 1:64 metric scale is a handy tool. Measuring and cutting parts using the scale gives a better feel for real sizes.

Measurements are in inches, but Sheet 4 has a conversion table giving equivalent real ship sizes in inches, decimals, and millimeters.

2. Making Allowances Along the Way

Try to be exact when following the plans, but use common sense. Adjustments may be necessary to compensate for small differences in how your model is shaping up; perhaps one mast has too much *rake* (the angle at which it sits). Lines should not drape over fittings or conflict with other lines when *belayed* (secured). If necessary, move a belaying point or fairlead. Put yourself on the ship, imagine performing the task, and use logic.

3. Understanding Hull Lines

Beginners may not be familiar with the following hull lines. *Buttock* lines are vertical longitudinal planes cutting through the hull. *Waterlines* are horizontal planes, and *sections* are transverse vertical planes. *Diagonals* are planes cut almost perpendicular to the station lines. These lines define the hull's shape and are used by the draftsman to *fai*r it (create even curves).

A complete set of hull lines is not needed for this model, because laser-cut bulkheads and center keel define the hull. Sheet 2 shows the bulkheads. They are similar to a ship's *body* plan or sections, and illustrate how the hull curves from top to bottom.

4. Using Basswood Lumber

Basswood comes in 1/32″, 3/64″, 1/16″, 3/32″, 1/8″, 5/32″, 3/16″, 1/4″, and 1/2″ thick sheets and strips. Strip widths are in the same increments, while sheets may be 1″, 2″, 3″, or 4″ wide.

Note: Model Shipways occasionally substitutes lime (*Tilia vulgaris*), a European wood, for basswood (*Tilia americana*). Both have a fine, uniform texture and straight grain. Lime, however, has superior steam-bending qualities. It is often called basswood in Europe. Based on *Bluenose's* 3/16″ = 1′0″ scale, 1/64″ equals 1″ on the real ship, 1/32″ is 2″, and so on. Generally, basswood strips or sheets can be used as is. Occasionally, a strip must be thinner than the supplied size. To maintain scale, sand the strip to the required thickness with a sanding block before making the part.

Another way to reduce stock is with a hobby sanding thickness planer (sold commercially). Those who don't own one can chuck a sanding drum into their drill press, clamp a block alongside the drum to act as a fence, then insert the strip between the drum and block. This makeshift tool works quite well.

Sorting the wood in the kit by thickness saves time. After selecting and cutting what is needed, return the remaining stock to the proper thickness pile. Don't worry about using a piece for one item that was intended for another. Model Shipways supplies enough extra wood to complete the model before running out.

5. Britannia Metal Fittings

Before painting metal fittings, remove any mold joint flash with a #11 hobby blade, then file or sand smooth with fine sandpaper. Clean parts in dishwashing liquid and warm water to remove traces of mold release agent and any body oils your fingers have deposited. Rinse thoroughly and allow to dry completely before applying primer.

6. Soldering & Working with Brass

Although paper strips are simpler to make, mast bands, chain plates, and other metal fittings should be fashioned from brass strip. Follow this advice when working with brass:

Cut brass sheets and strips with a small pair of tin snips or heavy scissors. Thicker brass will require a jeweler's saw. After cutting, smooth the edges with needle files followed by wet-or-dry fine sandpaper used dry. Cutting slivers from brass sheet curls and bends it sideways. To straighten, grip the ends with

a pair of small pliers and pull in opposite directions. Thin brass sheets can be scored with a utility knife and metal straightedge, then snapped off. Use two or three light passes, cutting against a maple chopping block, birch board, or glass backing.
Drilling holes in brass with a pin vise is a slow process. The solution is to mount a handpiece for flex-shaft machines in a hobby drill press. Several companies manufacturer this tool and it is worth the cost. When working with brass, use a 1/4" or thicker piece of maple or birch for backing. (Avoid softwoods, as these flare the exit hole.) To prevent the bit from wandering, mark the spot with a small center punch. Lubricate the bit with light oil and drill slowly to avoid breakage. Keep rpms under 2,000, or excessive heat buildup will also break the bit. Caution: The brass will become hot, so clamp the pieces to the drill press table or hold them down with a wooden stick. Do not touch the brass!

Solder: Until recently, modelers used pure silver solder to avoid the corrosive qualities of lead in soft solder. Today, many solders are lead free. They're composed of tin and antimony, are strong, and melt at less than 450º F. Some brands are mixed with 3% or 4% silver, but still melt easily. Consequently, no reason exists to use pure silver solder (melts at 1300º F).

Flux: Purchase pure solder and buy flux separately for additional control. Paste fluxes apply more precisely than liquids, which run to all the wrong places.

Soldering: The key to soldering is keeping the brass clean. Use a solvent, lightly sand, or both. Once the parts are cleaned, don't touch them. Your fingers will leave greasy spots. Soldering is easy if your work is set up properly. First, immobilize the parts in a fixture or other holding device, then add just enough flux to the joint to do the job. Remember, solder flows where flux is applied.

Next, cut a small piece of solder and lay it on the joint before heating. Experiment with various sizes to learn how much solder it takes to just fill a joint. The joint should look like the real thing, not a big glob of fillets. Heat the joint with a small torch or pencil soldering iron. This sequence is important. The larger the parts, the longer it takes to heat the brass and melt the solder. Remove excess solder with needle files.

Painting & Staining the Model

Beginning with directions on applying finishes may seem strange, but it isn't. Much time and effort can be saved and more professional results obtained if the finishing process is carried out during construction. Paint small parts, masts, and spars before they are installed. The painting sequence must be well thought out; otherwise, assembly difficulties can arise. For example, painting a cabin or hatch coaming is easier if it isn't glued to the deck. Store parts in covered containers until needed. Proper timing when applying finishes or using masking tape to define painted edges should eliminate unsightly glue marks and splotchy, stained surfaces. Take advantage of these general suggestions:

1. Preliminaries

Sanding and cleaning: Rub down external surfaces with 220 grit sandpaper, then wipe off every speck of dust. Give untreated surfaces two light coats of primer. Sand very lightly after the last application. Don't sand down to bare wood. After washing your hands, use a soft brush and clean, soft rag or tack rag to gently dust the hull. Use a hobby spackling compound, such as Pic-n-Patch or DAP, to fill any scratches and defects, then sand and prime again.

Choosing paint: Glossy surfaces are not desirable on ship models. A flat finish or one with a slight sheen is best, because it doesn't reflect daylight or artificial lights. Consequently, details show up better. However, the undercoat or primer should be dead flat. A primer gives the surface a little tooth and helps top coats adhere better.

Any of these hobby paints are satisfactory; Floquil, Polly-S, Testors, Humbrol, and Model Masters. Jo Sonja artists' paints (used by bird carvers) or Holbein Acryla Gouache are also acceptable. They are a combination acrylic-gouache.

Hobby paints have a variety of reflectance levels. For example, Floquil's model railroad and military colors are basically flat. Its marine paints, designed to match original ship colors, vary from gloss to flat and have a reflectance reducer. When using a mixed group of reflectance levels, finish the completed model with a flat, clear coat. It provides durability and seals any decals or rub-on lettering.

Use either Floquil's model railroad or marine colors. Spraying on a coat of reducer will blend the colors and subdue a gloss to almost flat. Because of resins in the reducer, subsequent applications raise the reflectance level from flat to about semi-gloss or satin finish. Consequently, for nearly dead flat, use one coat of reducer. For a little more sheen, apply several coats. If you start with flat paint and want some gloss, finish with a crystal or high gloss coat.

Jo Sonja paints are dead flat. To finish, use either a flat acrylic varnish for durability or a gloss varnish to increase reflectance. Other manufacturers have similar paint mixes and flat or gloss finish coats. Always read the manufacturer's instructions.

Brush painting: Painting with fine, soft bristle brushes is probably best for the beginner. Many skilled modelmakers prefer the brushed-on technique, because its subtle imperfections impart a more lifelike appearance to the model.

Brushes must be soft and of the highest quality. Artist grade sable or synthetics are the best. Use wider brushes for painting broad surfaces. If too narrow, the bristles will cause excessive streaking.

When applying paint or stain with a brush, lay down one thin coat in a single stroke, then move to an adjacent area and coat it with a single stroke. Never go back over fresh paint. That will tear up the surface. Wait until it has dried to a hard finish before applying a second coat.

Spray Painting: Although slightly expensive, a Paasche, Badger, Testors, Revell-Monogram, or similar airbrush will produce a first-rate job and is worth the investment. Airbrushes are either single action (trigger controls only airflow) or double action (trigger controls air and paint) and easy to use. Spray patterns can vary from thin to about 1/2" wide by either adjusting the needle or installing a different, sealed nozzle. In some brands, paint travels through the airbrush body to the needle. These require disassembling to clean. Other designs bypass the body and bring paint directly to the nozzle. These clean by simply spraying solvent through them.

Paints are either water (acrylic) or solvent based. Solvent-based paints spray best. This includes Floquil's lacquers (thin about 25%) and Model Master's enamels. Polly-S and Model Master's acrylics are difficult to spray, and must definitely be used with the manufacturer's special thinner. Thinning water-based paints with water creates surface tension problems, resulting in poor coverage and spray atomization. Experiment with acrylics. Some modelers have success and others don't.

When using solvent-based paints, work outdoors or equip your shop with a spray booth. These fumes are toxic.

Many brands of aerosol paints produce good results. However, test them on scrap wood before spraying the model. Aerosols put out a lot more paint than an airbrush, so be careful to avoid runs.

The Floquil paints spray very well when thinned about 25%. You will find many brands of paint available in aerosol cans which can give quite good results. Test them on a wood block as previously described before using them on the model.

Floquil, and other brands, has special thinners for its various paint lines. Follow each manufacturer's recommendations. Mixing brands is not a good idea, because they may not be compatible. Sometimes, however, no other option exists. If so, apply each brand separately and allow to thoroughly dry before adding the next. Always test to make sure the final flat or gloss clear coat is compatible with the paint it covers.

Masking surfaces: Masking can be a tricky process. Some brands of masking tape are worthless, because they allow paint to seep underneath their edges. For masking fine stripes or straight and curved lines, use a graphic arts tape such as Chart Pak. It comes in widths as fine as 1/32" and 1/64". Chart Pak tapes have superb adhesion and won't bleed when firmly applied (burnishing is recommended). Black plastic electrician's tape and Scotch Removable Magic Tape are also excellent. Scotch's tape has the same, low stick adhesive as its famous Post-It pads. In fact, Post-It Correction Cover-Up Tape can be used for masking. Rolls are 58-feet long and come in 1/6", 1/3", and 1" widths.

Scribing the waterline: This can be done in a variety of ways. One method is to mount the hull so the waterline is parallel to the bench top, then mark the waterline using a height gauge and sharp pencil or scriber. With or without the aid of masking tape, paint the bottom and topside colors precisely to this line. The scribed line acts somewhat as a barrier against transgressions by either color, but a steady hand is needed.

A second approach is to guess where the waterline will lie, but deliberately overrun it when spraying or brushing on the bottom color. Once it has dried, scribe the waterline onto the hull with a height gauge, then paint down to it. Those with shaky hands should first apply masking tape to the waterline.

2. *Bluenose* Color Scheme

The color scheme is shown on the plans. Model Shipways' paint kit approximates the required colors. Purchase it separately.

Stage 1

Framing the Plank-on-Bulkhead Hull

1. Bending Wood

Building a P-O-B hull requires bending some wood without distorting its desired position (doing so stresses glue joints and fasteners). Although the term steam bent is used to identify the process, there are three ways to do it.

Steam bending: Hold the piece over a kettle of boiling water and bend. Hold the wood in position until it cools. It should remain in that position, but may spring back slightly.

Soaking: Submerge the piece in warm water for several hours. Try adding a little household or pure ammonia. This speeds up the soaking process and makes the fibers slippery so the wood is easier to bend. After soaking, hold the piece in position with a fixture and let it dry completely. Some neat devices are available for holding steam-bent parts.

Soldering iron: Large soldering irons with a tubular end are ideal. Clamp the iron upright in a vise. While the iron heats, soak the strip of wood in tap water. Some modelers prefer bending around the tube near the handle (it's not as hot), while others use the shank. Move the strip back and forth against the iron. Its heat turns water into steam and drives it into the wood. The trick is to wait until you feel the wood wanting to yield before starting the bend. Begin too soon or apply too much pressure and the strip will break.

Wood dries rapidly, so care must be taken to avoid scorching. Resoak and reapply it to the iron until the desired shape is achieved. Once the piece is formed, it can go directly on the model. Because the wood's memory has been permanently altered, it will never spring back to its former shape, meaning no stress on any timber or fasteners. Spend some time acquainting yourself with this method and you'll never bother with fixtures again.

Fig. 1-1 Center Keel Assembly

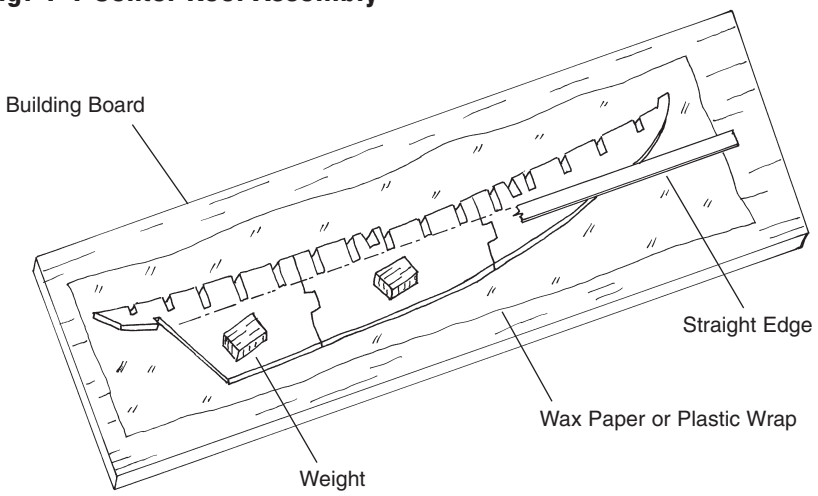


Fig. 1-2 Cutting the Rabbet into each Side of Center Keel

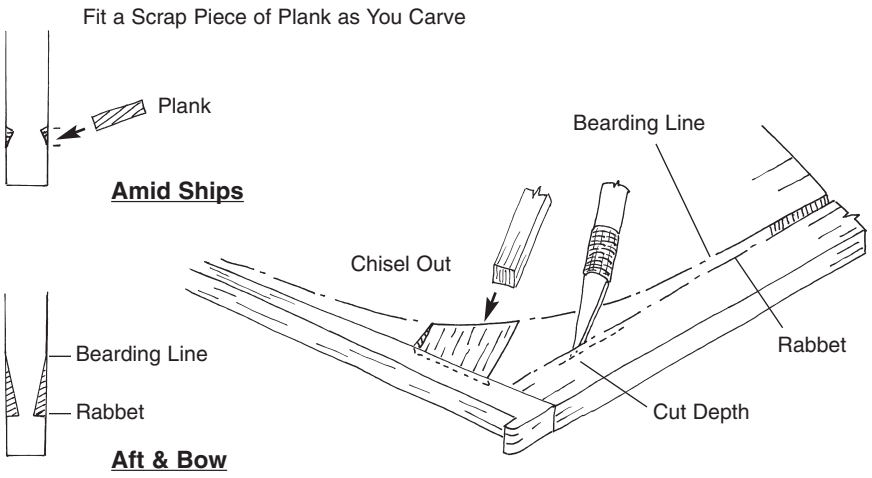
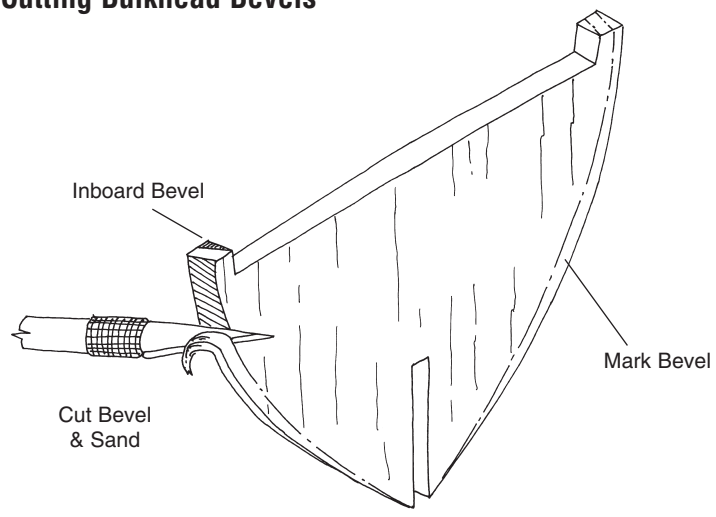


Fig. 1-3 Cutting Bulkhead Bevels



2. Center Keel Assembly

The first step in constructing the hull is to assemble the laser-cut center keel. With a sharp pencil, mark the reference line and bulkhead stations on both sides of the center keel. Be especially critical when locating the reference line; it is a key to proper alignment. Measure from several points on the plans.

Lay a sheet of waxed paper or plastic wrap over a flat building board or table, and place the center keel halves on top. Affix the joints with white or woodworker's glue. Use a steel or aluminum straightedge to align the reference line. If necessary, add weights to hold down the parts. Let the adhesive dry at least overnight, preferably 24 hours (Figure 1-1).

3. Installing the Sternpost

The keel and stem are part of the center keel, but the sternpost is a separate piece. Taper the sternpost per the plans and glue in position.

Option: Cut the rabbet before installing the sternpost.

4. Cutting the Rabbet

Measuring from the P-O-B plans, mark the rabbet and bearding lines on both sides of the center keel with a pencil. At the stern and bow, cut a 1/16" deep rabbet with a hobby knife. Now, using a 1/8" wide chisel, start at the bearding line and cut toward the rabbet. The 1/16" thick hull planking must lie flush against this cut area. Figure 1-2 shows how the rabbet changes at midship. To help judge the angle of the rabbet, position a scrap piece of plank against the keel as you cut.

5. Tapering the Stem

Taper the stem according to the plans.

6. Installing the Bulkheads

Laser-cut bulkheads include timberheads. These extend above the deck to form bulwark stanchions. Compare the bulkheads with the patterns on Sheet 1, determine which is which, and label them **A** through **O**. Test each to make sure it slides into the center keel slots. If the fit is too tight, sand the slots.

Fig. 1-4 Forming Bulwark Stanchions

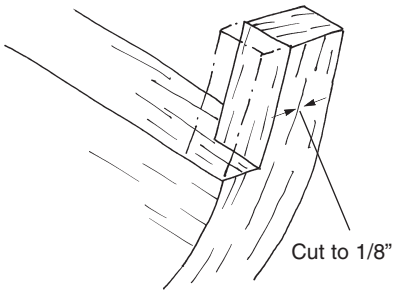


Fig. 1-5 Gluing Bulkheads to Center Keel

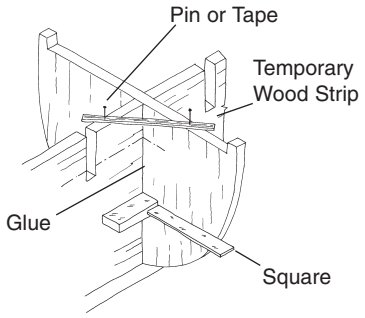
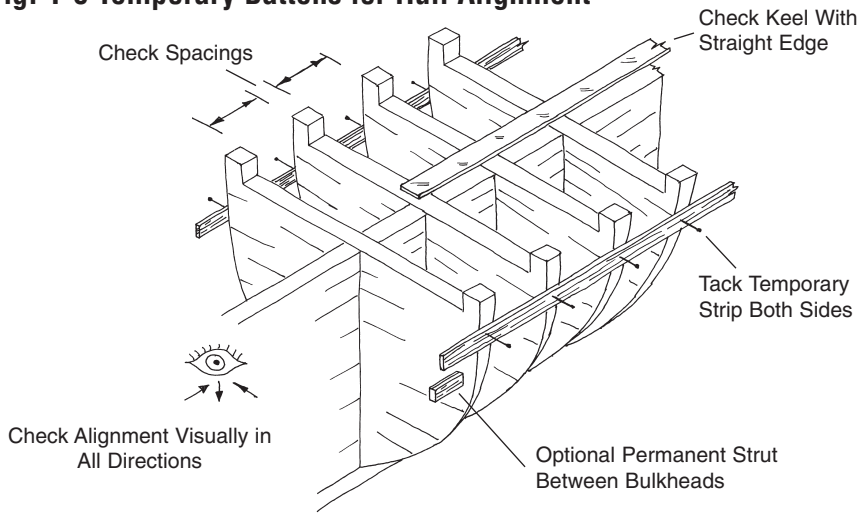


Fig. 1-6 Temporary Battens for Hull Alignment


Check Spacings
Check Keel With Straight Edge
Tack Temporary Strip Both Sides
Check Alignment Visually in All Directions
Optional Permanent Strut Between Bulkheads

Bulkheads should fit snugly with a little tolerance for glue.

Using a pencil, mark the reference line on every bulkhead. It must align with the reference line on the center keel. This assures an accurate hull with each bulkhead correctly related to the others.

Next, use a tick strip to transfer the bevels from the plans to the bulkheads. Mark them in pencil. Cut the bevels with a #11 hobby blade (Figure 1-3). Deck bevels and side bevels near amidships are diminutive. Barely perceptible ones are sanded in after the bulkheads are installed.

Bulwark stanchion extensions: Bulkheads are 3/16" thick, but the stanchion extensions should be 1/8", so cut them back (Figure 1-4). Stanchions between bulkheads are added in Step 14.

Glue the bulkheads in place. Make sure their reference lines match the one on the center keel. Use a small machinist square to set each bulkhead perpendicular to the center keel, then tack or tape a temporary strip to the top of the bulkhead to hold it in place while the glue dries (Figure 1-5).

Model Expo sells the Fair-A-Frame Building Slip (Ms 105), a device that holds the center keel steady and bulkheads perpendicular to it. Purchase it separately.

Once the bulkheads are installed, tack or tape a temporary batten to the sides of the hull just below the deck (Figure 1-6). This is a critical step. Measure the spacing between each port and starboard bulkhead and retack the battens until the hull is aligned. Although the center keel was assembled flat, it could warp and produce a banana-shaped hull. When it looks correct, check it again.

Option: When the hull is aligned, add permanent struts between bulkheads close to the exterior, then remove the battens. Now examine the bottom of

every bulkhead. It should feather out and lie precisely on the bearding line. If not, trim until it does. Also check that the top of each bulkhead at the centerline is flush with the top of the center keel. Since alignment is based on the reference marks, slight errors can occur. Sand or add shims until the bulkheads and center keel surfaces are flush (Figure 1-7).

Next, sand in the remaining bevels. Check the hull's fairness by laying a 1/8" square basswood batten against the bulkheads at various locations (Figure 1-8). Correct bumps and dips by sanding or adding shims. This is an important check, for manufacturing or assembly errors can occur and the hull planks must lie flat against the bulkheads.

7. Installing the Stern Blocks & Transom Framing

Port and starboard filler blocks butt into **Bulkhead O** and the center keel. They support the stern frames and provide more area on which to glue hull planking (Figure 1-9). Follow the plans when carving them.

8. Installing the Horn Timbers

Install the 1/8" square horn timbers on the center keel per the plans. They support the ends of hull planks at the counter (Figure 1-10).

9. Covering the Mast Slots

Cut the pieces shown on Sheet 2 from scrap wood, then glue to both sides of the two mast slots in the center keel. Make sure they are securely fastened, because access to them is impossible after the deck is laid. Notice the two methods shown. If a flat piece is used, cut a tenon in the bottom of the masts to fit the slots (Stage 6, Step 2).

10. Installing the Waterway

The waterway in the fore deck is 3/32" thick. First, fit the plank between the bulwark stanchion extensions, then the other two inboard planks. Note: The third (innermost) plank has a slight bevel on its inboard edge (Figure 1-11).

Fig. 1-7 Correcting Bulkheads at Bearding Line

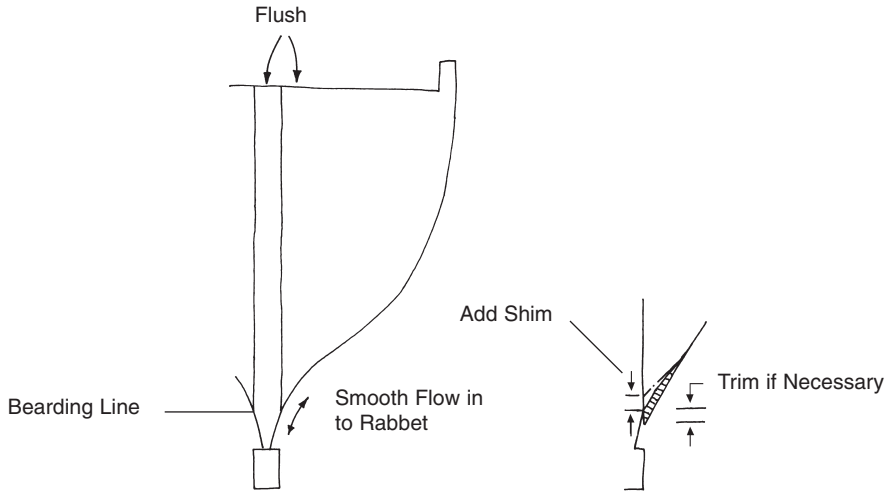


Fig. 1-8 Checking Hull Fairness With a Batten

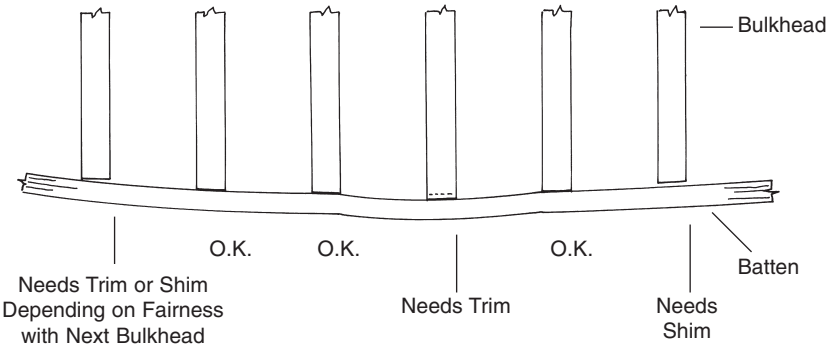
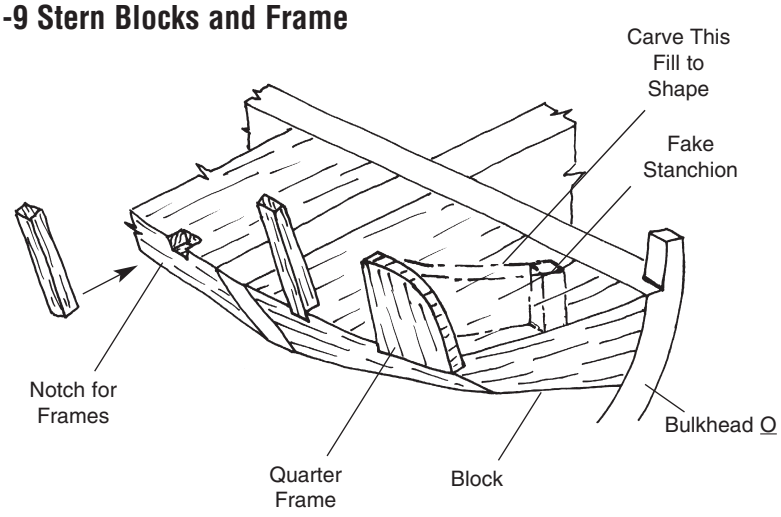


Fig. 1-9 Stern Blocks and Frame



The waterway on the quarter deck is fitted similarly, except it is flush with the 1/16" thick deck planks

11. Installing the Knightheads & Hawse Timbers

Knightheads and hawse timbers are 1/8" thick. On the real ship, hawse timbers angle forward. After mounting them, drill the hawse holes, then add the anchor cable chafing block (Figure 1-12).

Option: Use a solid sheet for the hawse timbers and knightheads.

12. Installing the Main Rail

The forward and aft main rails are laser cut, but make the middle portions from stripwood. Use a scarf joint about every 6 inches, and position the rail with pins (Figure 1-13). Be careful how the rail is aligned. Remember, it must evenly overhang the hull planking and bulwark stanchions. When properly positioned, glue the segments to the stanchions.

Note: The main rail is wider where belaying pins are located.

13. Installing the Buffalo Rail, Monkey Board & Monkey Rail

Only the forward and aft sections of these rails are laser cut. Fashion the middle sections from stripwood. Install like the main rail, keeping alignment in mind.

The forward buffalo rail is 1/8" thick. However, it may be supplied as two 1/16" pieces. Simply glue them together. After the rail is in place, taper according to the plans.

The monkey rail has a round section at the deck step. Carve this from stripwood.

When affixing the rails, be sure to clean up any excess glue around the joints. Clean joints are a must.

14. Installing the Remaining Bulwark Stanchions

Fashion the three bulwark stanchions between each bulkhead from 1/8" square strip. Place a scrap plank outboard to maintain the proper alignment when mounting them (Figure 1-14).

Fig. 1-10 Horn Timbers

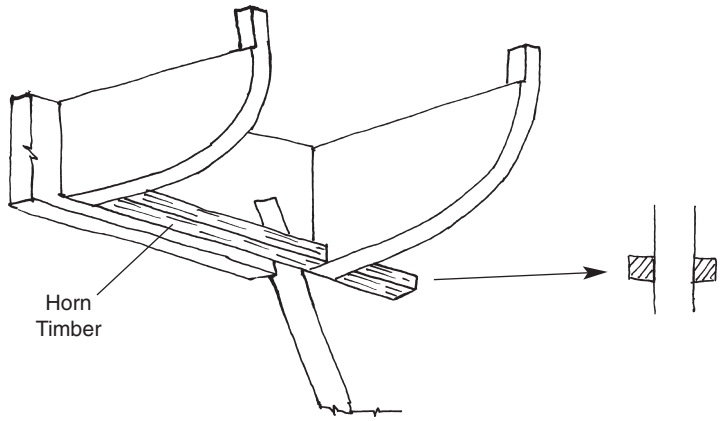


Fig. 1-11 Fore Deck Waterway Planks

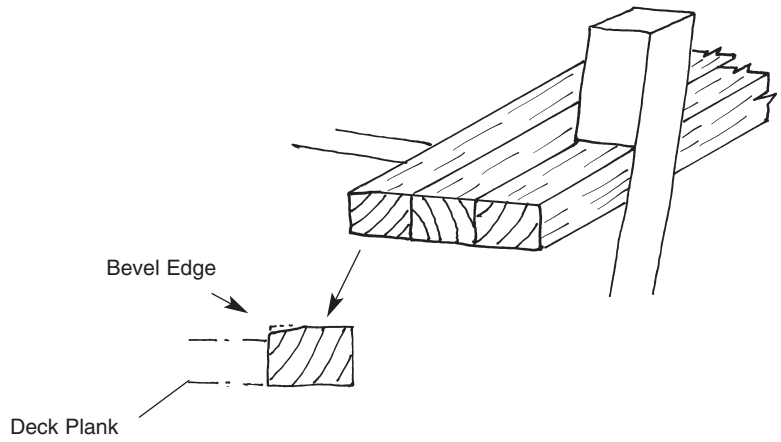
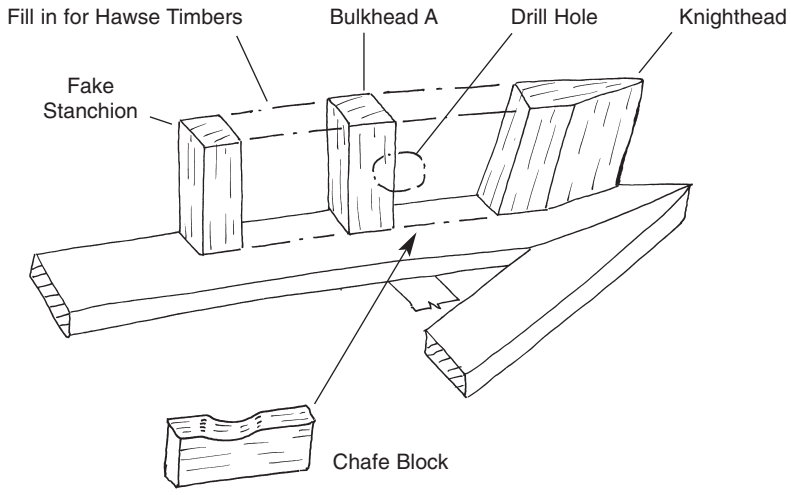


Fig. 1-12 Knighthead & Hawse Timbers



15. Installing the Great Beam & Deck Beam

The great beam (two laser-cut pieces) at the quarter deck step sits atop **Bulkhead H**. Glue the laser-cut deck beam forward of **Bulkhead H**. This beam provides a landing for the fore deck planking (Figure 1-15).

That completes the basic hull framing. Touch up rough spots with sandpaper. Consider painting the bulwark stanchions before continuing.

Stage 2

Planking the Plank-On-Bulkhead Hull

Here are some shipbuilding terms used in the planking process.

Plank: Single length of wood used to plank a hull or deck. A *strake* is a continuous line of planks from wherever it begins to where it ends.

Garboard: Planking strake adjacent to the keel.

Sheer strake: Upper line of planking on a hull.

Wale: Heavy layer of strakes below the sheer strake. *Bluenose* has no wale.

Belts: Group of planks along the hull. Belts are laid out using *battens* (temporary strips of flexible wood). A *ribband* is also a batten. It holds frames in position during planking. Ribbands are removed as planking is completed.

Spiling: Process for marking and cutting a plank to a given shape.

Edge-bending or springing: To bend a plank edgewise.

Fair: Refers to smooth, gradual curves when planking.

Nib or nibbing: Eliminates the tapered edge of one plank from running into another at a sharp angle by squaring off the pointed end and inserting it into a notch in the following plank. Nibbing generally applies to decks, but sometimes hull planks are nibbed.

Fig. 1-13 Installing The Main Rail

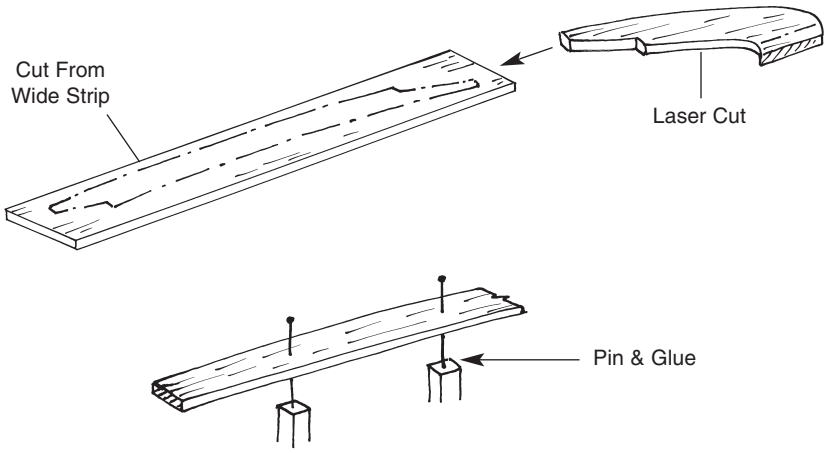


Fig. 1-14 Installing Fake Bulwark Stanchions

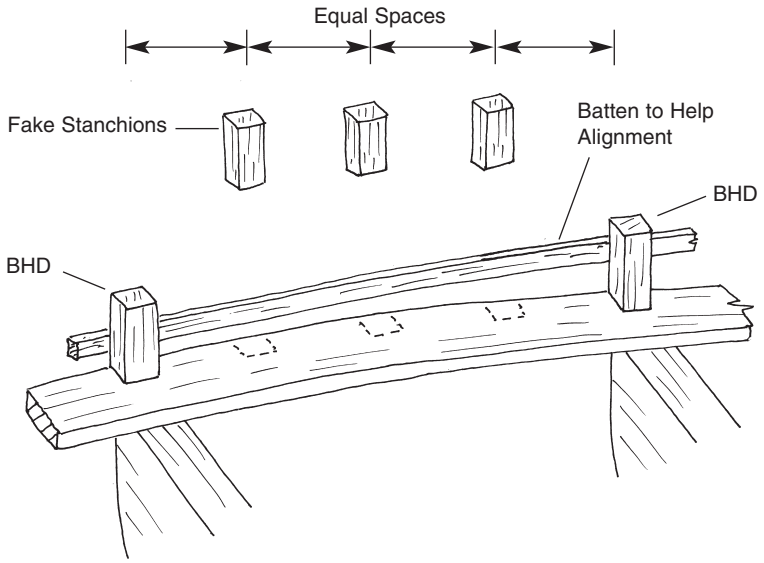
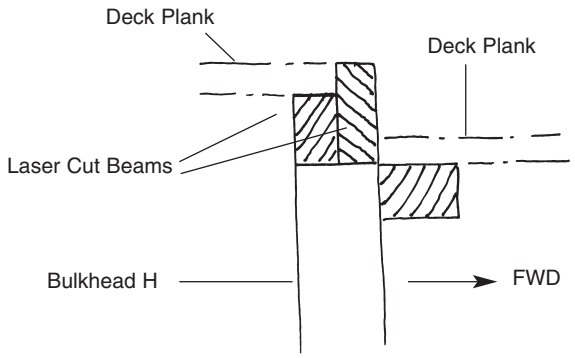


Fig. 1-15 Great Beam & Deck Beam at Step



Stealer: Plank inserted into another plank or between two adjacent planks to reduce their width. Or, when two planks taper toward a narrow end, both may have to be cut off and a wider plank substituted to leave enough wood for fastening.

Counter: Underside of the overhanging portion of a ship's stern.

1. Getting Started

Most modelers find planking tedious. Work slowly and think of each plank as a project unto itself. Since hull sides are identical, simultaneously cut one pair of port and starboard planks to shape. Fit the plank on one side, then the other. Don't rush. Speed results in frustration and a poor job.

Before starting, secure the hull upside down it in a vise or cradle. Something portable that rotates is ideal. Model Expo sells a planking vise (MX25) for this purpose.

2. Planking Battens & Belts

Hulls are easier to plank when divided into belts. Each is designed to lay the planks against the bulkheads without excessive edge bending. They gently sweep up at the ends like the deck sheer. Planks within a belt are usually evenly spaced, tapered, and fitted. Belts prevent errors from accumulating

When selecting a belt width and the number of planks it contains, consider how the planks taper and lay against the bulkheads. Taper too much and not enough stock is left for fastening. Then a larger plank must be substituted for two planks to increase the width. Planks too wide won't lay flat. In some areas, the distance between planks widens rather than tapers. If it becomes too wide, a stealer must be added. While these alterations are acceptable and employed on many ships, the best run of planking limits their number. (Figure 2-1 illustrates some inserts.) *Bluenose* requires no stealers.

Sheet 2 shows the planking layout. Fore and aft views plus a profile view provide a complete picture.

Fig. 2-1 Planking Shown Using Stealer Inserts

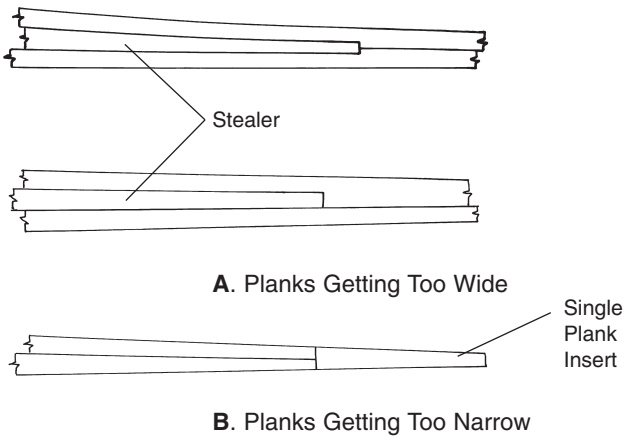


Fig. 2-2 Staggering The Planking Butts

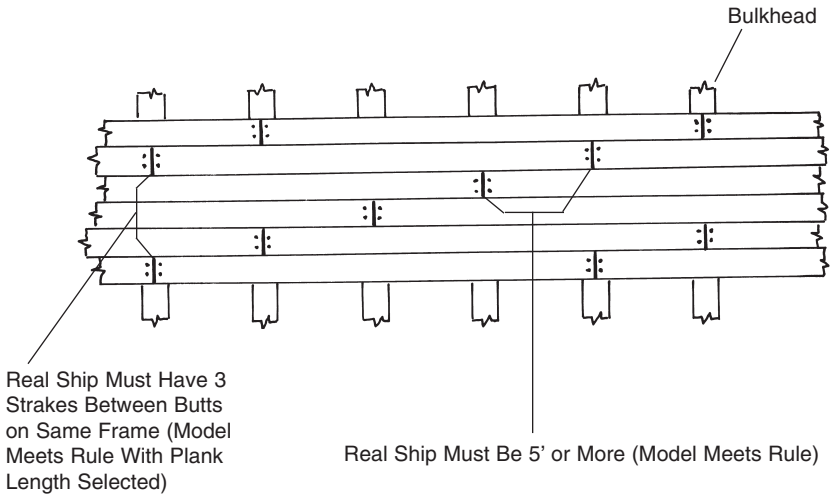
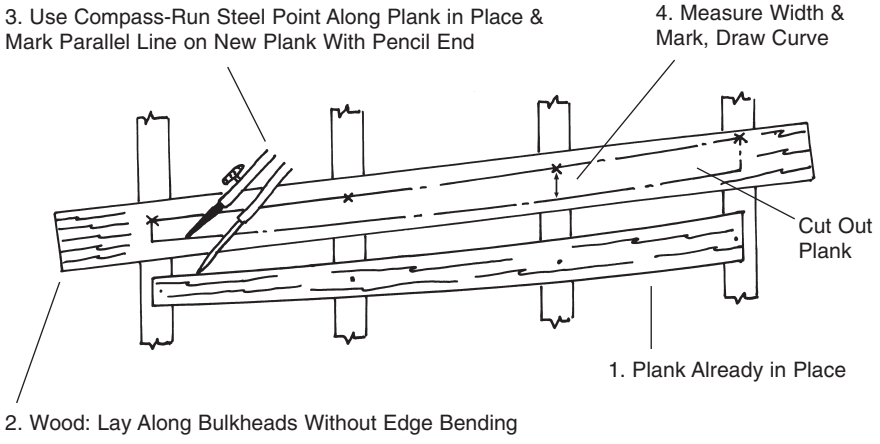

Bulkhead
Real Ship Must Have 3 Strakes Between Butts on Same Frame (Model Meets Rule With Plank Length Selected)
Real Ship Must Be 5' or More (Model Meets Rule)

Fig. 2-3 Spiling The Planks When Edge Bending Cannot Be Accomplished


3. Use Compass-Run Steel Point Along Plank in Place & Mark Parallel Line on New Plank With Pencil End
4. Measure Width & Mark, Draw Curve
Cut Out Plank
1. Plank Already in Place
2. Wood: Lay Along Bulkheads Without Edge Bending

3. Planking Butts

Few trees grow as tall as ships are long. Consequently, real planks were generally 20 or 30 feet in length. Some builders think a plank as long as the model is easier to use. They scribe in fake butts or omit them. Although this can be done, working with shorter planks has its advantages. For example, tapers mark quicker and only one hand is needed to hold and fasten the plank. Should a mistake happen, just a small piece is affected. So, the following is based on scale-length planks.

Because this is a plank-on-bulkhead model, butts must occur on bulkheads and won't simulate shipwright practice. Use a plank length (about 7" or 37 scale feet) to cover four bulkhead spaces. Occasionally, a longer or shorter plank may be necessary to avoid stubby pieces at the bow and stern.

To emulate shipwright practice, stagger the butts (Figure 2-2). This also applies to deck planking. Covering four bulkhead spaces follows the rule; i.e., three full plank widths between butts on a single frame. One plank covering three bulkhead spaces won't work, because that leaves only two full planks between butts.

Fig. 2-4 Hull & Transom Plank Intersections

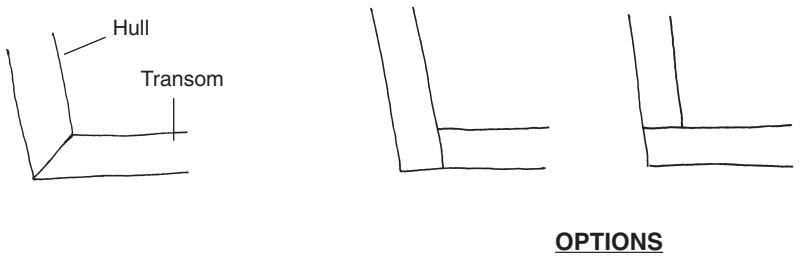
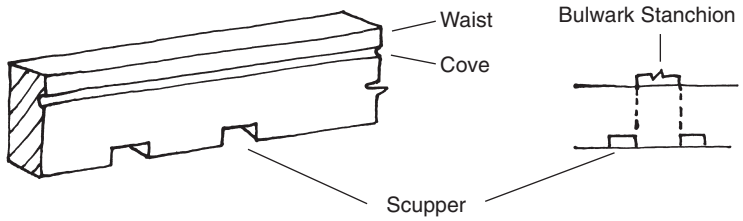


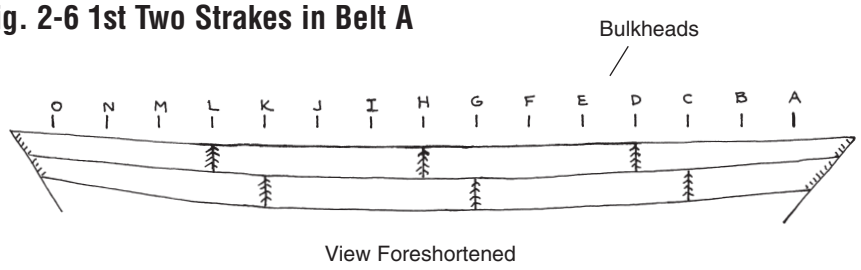
Fig. 2-5 Plank With Cove & Scuppers



4. Spiling

Edge bending planks on real ships occurs on a limited basis. Wood is rigid, so many planks must be cut to shape. Spiling (Figure 2-3) is simply a matter of transferring curves to a straight plank, then sawing them out. To test if spiling is required, lay a tapered strake against the hull and see if it can be edge bent into position without excessive force. If not, then spile and cut the strake to shape. In most cases, basswood strips are flexible enough to edge bend in place.

Fig. 2-6 1st Two Strakes in Belt A



5. Fastening the Planks

A commercial plank clamp is available, but is more trouble than it is worth. It screws into bulkheads, leaving a big hole to contend with when installing subsequent planks. Model Expo, however, sells a hull planking clamp (MX103) that relies on side clamps to hold planks in place. Or, use metal push pins to position planks, but be careful not to split the wood. If necessary, drill a pilot hole first. Smear a light film of white or woodworker's glue along the edge of the plank with your finger, then touch each bulkhead with thin cyano to quickly affix the plank. Be careful not to glue your fingers to the model.

While glue alone will secure a plank, small brass brads or wooden treenails provide additional holding power and duplicate shipwright practice. If using fine, brass brads, cut off and discard the heads, then hammer in. Treenails are commercially available, but making your own is easy. Buy a package of long bamboo skewers, strip off short lengths, and pull through a drawplate to the desired diameter. Drill holes through the plank into the frame, dip the treenail in white or yellow glue, and drive in place. Nip the dowel flush with the planking or buy a treenail cutter. It mounts in a handpiece, and is an expensive accessory. Another alternative is to whittle flat toothpicks (round ones don't work as well) to a point. Place the entire toothpick in the hole, rap sharply with a 10-inch bastard file, and break off the remaining portion. A file works better than a hammer, because its serrated surface catches and firmly holds the head of the toothpick, permitting it to be driven in tightly. Exterior stubble is dressed and sanded smooth when treenailing is completed.

For more authenticity, add treenails where each frame is located on the real ship. Treenails are essential if the model is left bright (unpainted).

6. Planking the Outer Hull

Belt Layout: Planking from the deck to the keel is tapered fore and aft. Consequently, the hull is divided into **Belts A** through **D**.

On Sheet 2, use a tick strip to mark the belt seams along each bulkhead. Transfer these points in pencil to the model. Now temporarily tack four, 1/16" x 3/32" basswood battens along the port and starboard belt lines. Battens assure an accurate run of planks by correcting any errors in drafting, tick strip marking, or transferring.

Once the six battens are in place, check their flow. Look at the model from the side and from the bow and stern. Do the battens have a pleasing, smooth curve? Are they symmetrical? If necessary, adjust the lower battens referring to the planking profile on Sheet 2. When everything is fair, make sure the belt seams are clearly visible. Remark those that aren't. Now, either remove the battens or leave them in place until they interfere with installing a plank.

Tapering Plank Edges: As planking proceeds, the edges of a particular plank may require tapering to butt flush against its neighbor. Properly machined planks have square edges. Butting them together on a hull may produce small gaps. Most are sealed with glue or wood filler, or caulked on a real ship. Plank edges are often deliberately sloped to ensure they butt against each other, while providing a sufficient gap for caulking. To create a perfectly smooth hull without gaps, trim each plank edge as it is fit. The decision to taper or rely on filler is yours.

Planking the Transom: Cover the transom with 3/64" planks. Transom and hull planks most likely intersect in a miter. However, one option is to butt the planks at the joint (Figure 2-4).

Planking above the Waist: Planking is 1/32" thick from the rail to the waist, and fairly uniform in width. Narrow planks are used on *Bluenose*, but wider ones are a modeling option.

Plank from Waist to Deck Level: This 1/16" thick plank (or several narrow ones on the real ship) requires special treatment before gluing in place. First, either scribe or omit the cove (groove at the top edge). Once the plank is painted, the cove will show up. Next, cut small scupper slots in the plank at deck level (even slightly oversize ones will still look good). Each side of the bulwark stanchions has scuppers (Figure 2-5).

Fig. 2-7 Planks at Counter

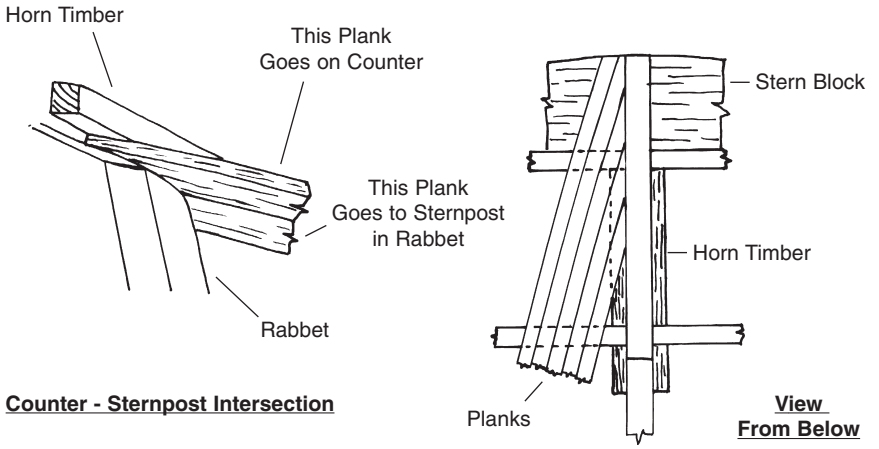


Fig. 2-8 Fashion Piece

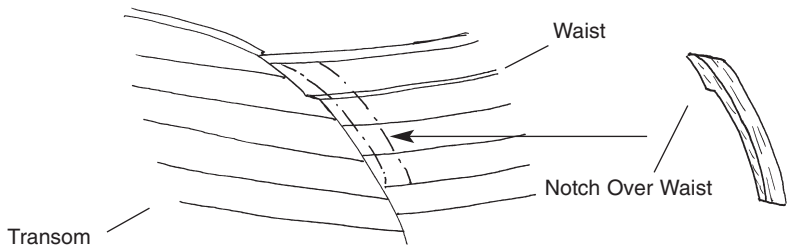
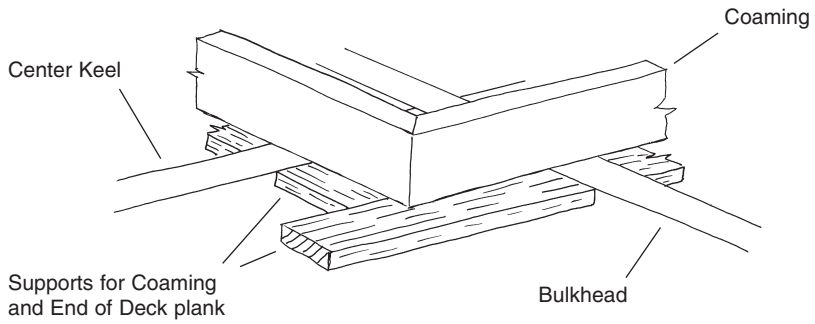


Fig. 2-9 Coaming Supports



Laying the Planks in Belt A: Planks below deck level are 1/16" thick. Each belt is done separately, so planking can start with any one. However, it's logical to begin at the top and work down. **Belt A** has eight, 1/16" thick strakes. The maximum plank width, at **Bulkhead H**, is roughly 1/8" on the model (8" on the real ship). Use 1/8" wide strips for the midship area and 3/32" strips where the taper permits.

Lift the plank widths from the hull planking layout with a tick strip. If any batten locations were changed, divide the space on each bulkhead into eight equal plank widths. Set the slide on

your proportional dividers to the number of planks in **Belt A**. Span the width of **Belt A** with the long legs. The distance between the points on the short legs is the width of each plank in the belt. Mark these lines on the bulkheads with a pencil. **Belt A** is now completely marked.

The next step is to cut planks to fit between the marks. **Belt A** doesn't require spiling, so make straight tapered planks. Start at **Bulkhead H**. Use four planks, one from **Bulkhead H** to **Bulkhead L**, another from **Bulkhead L** to the stern, **Bulkhead H** to **Bulkhead D**, and **Bulkhead D** to the stem. First, lay a piece of planking stock over **Bulkheads H** through **L**. In pencil, mark their overall length on the plank, then the position of each bulkhead. Next, using a set of dividers or tick strip, lift the plank widths from the marks on the bulkheads and transfer to the stock. Draw a line through the points and cut the plank. Trace this tapered plank to obtain another for the other side of the hull. Repeat for the remaining planks in **Belt A**.

Install the planks. Repeat the process for the next strake, but stagger the butts (Figure 2-6). Use four planks, one from **Bulkhead G** to **Bulkhead C**, another from **Bulkhead C** to the stem, **Bulkhead G** to **Bulkhead K**, and **Bulkhead K** to the stern. This last plank spans about four-and-a-half bulkhead spaces.

Moving to the next planking strake, stagger the butts starting at **Bulkhead F**. Continue until the other strakes in **Belt A** are completed.

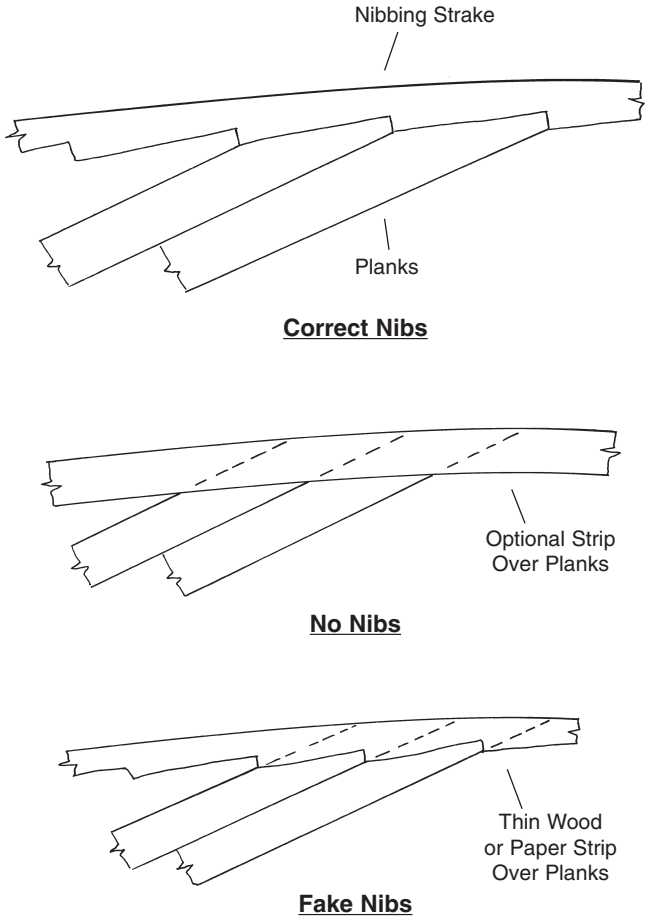
Note: Planks in **Belt A** and a few in **Belt B** extend to the counter and glue to the horn timbers (Figure 2-7)

Laying the Planking in Belt B and Belt C: These belts have eight strakes about the same width as those in **Belt A**. If the temporary batten is still in place, remove it. Lay the planks for **Belts B** and **C**, but remember to stagger the butts.

Laying the Planking in Belt D: This belt contains the garboard strake (next to the keel) and contains only seven strakes. Note: Planks widen near the stern, so use wider stock.

Sheet 2 shows a complete planking profile. Follow it to determine plank widths in **Belt D** aft. The hull planking layout doesn't show all the planks aft, so the profile view is necessary.

Fig. 2-10 Nibbing Ideas



Plank Variations within a Belt: Suppose a belt has seven planks the same width, but the eighth one must be wider to complete the belt. Cause for worry? Certainly not. No planking job, even on real ships, is that precise. After all, these are hand-cut planks and slight variances will occur. The important thing is to keep their flow smooth.

Fashion Piece: Once planking is completed, add the fashion piece at the stern (Figure 2-8).

Natural Wood, Double Plank Option: Most wooden ships have one layer of external planking. However, many builders are familiar with double-planked European kits or want a natural wood finish typical of Navy Board models. Even though *Bluenose* should be painted, its hull can be double planked with the kit's walnut strips.
To cover the exposed rails, cap them with walnut, stain them a similar color, or substitute walnut when making them. Follow the basswood planking process. Using longer strips will work better now, because plank shapes are already defined. Simply lift dimensions from the hull and cut the walnut. When completed, sand and finish the hull with Floquil oil or glaze, or tung oil. Finally, add a coat of wax, then polish.

7. Planking Inboard (Ceiling Planks)

Only the inboard transom is ceiled with 3/64" planks.

8. Planking the Decks

Coamings: Before planking the deck, decide how to treat the hatch, cabin, skylight, and companionway coamings. The recommended approach (follows shipwright practice) is to glue the coamings to their appropriate bulkheads, then plank around them. Be sure to glue and pin 1/8" thick scrap wood underneath each coaming's free sides prior to installation. This takes the place of deck beams and provides a permanent landing for the planks (Figure 2-9).

The alternative approach is to install the coamings, hatches, and deck structures on top of the deck, but remember to reduce their height by 1/16".

Deck Planks: Deck planks are 1/16" thick. They taper going aft on the quarter deck, and run more parallel to the cabin than the centerline. To omit this detail, run planks parallel to the centerline without tapering. While not completely accurate, it will still look presentable. Planks are parallel to the centerline on the fore deck.

Prepare a deck plank by painting one edge black or dark brown to simulate caulking. Be careful! Too much paint will penetrate too deeply with unsightly results. Do a test first. If it doesn't work, edge glue the planks with brown woodworker's glue. This adhesive dries dark enough to replicate caulking.

Procedure: Start deck planking at the centerline and work outboard. Scrape off any glue that squeezes out before adding the next plank. Butts can be included or omitted. On the real ship, they don't show up as readily as the seams. Butts can also be scribed after the plank is laid. If desired, fasten planks with brads or treenails (see hull plank discussion).

Nibbing Strakes: A nibbing strake goes where deck planks meet the waterways. Installation is a little tedious, so the strake could be omitted and the deck planks feathered instead (Figure 2-10).

Stage 3

Completing the Basic Hull Structure

Thoroughly examine the hull for starved glue joints. Fill these with wood glue or model spackling compound, then smooth the hull, buwarks, and deck with sandpaper.

Stage 4

Mounting the Hull

Mount the hull as soon as basic framing and planking are completed to prevent damaging fittings when handling the model. Proper mounting is important, because future alignments will require a true waterline. Two brass pedestals and a baseboard are supplied. Another approach to displaying the model is on a launching ways. Scratch build the platform or purchase the kit. Model Expo sells them (MSL0010, 0018, 0024).

Models should be cased to protect them from dirt and damage. Furthermore, most competitions require entries to be cased. A case is a cheap insurance policy. However, the kit's baseboard may be too small to serve as the base for the case. A case's outside diameter should be 4" longer than the model (2" fore and aft), 4" wider (2" port and starboard) and 2" higher. If the baseboard doesn't measure 36-3/4" long by 9-1/4" wide, make a new one to accept a case.

1. Mounting Board with Two Pedestals

Round the top edges of the baseboard or cut a simple chamfer. Those with access to a router can cut mouldings along the edges. Paint or stain the baseboard. Alternatives: Prefinished baseboards are available or make your own from basswood, cherry, walnut, bubinga, or rosewood.

Mount the model with the waterline parallel to the baseboard. Because *Bluenose* has a slight drag to her keel, the forward pedestal is a little taller than the aft one. Drill pilot holes in the keel and baseboard for the pedestal screws. If something goes awry and the balance is off, add a brass shim under one pedestal to correct it.

2. Launching Ways

Models without sails display best on a launching ways. They are easy to assemble and fasten to a baseboard. With a large enough baseboard, a builder can create a diorama based on a shipyard activity. Drill holes in the keel for the anchoring rods, then follow the directions to achieve the proper waterline level.

Note: Stain or paint the baseboard or launching ways before mounting the hull.

Stage 5

Adding the Hull Details

1. Fishing & Racing Gear

On the plans are symbols of a fish and pennant. The former identifies equipment used primarily for fishing. It was removed during a regatta to reduce weight. The pennant symbolizes racing gear. Fishing paraphernalia is provided. Without dories, anchors, and windlass hoisting machinery, the model looks bare.

2. Locating Deck Fittings & Structures

If hatch and companionway coamings were not installed when planking the deck, locate them along with the fife rail, boom crutches, galley stack, samson post, bowsprit and quarter bitts, windlass and hoisting gear, bilge pumps, chocks, and dory kids. To locate items, measure from a known bench mark such as the centerline or center of a mast. Lightly mark their positions in pencil on the deck.

While eyebolts, ringbolts, and cleats can wait, installing them now is a good idea. Once they're mounted, clean and finish the deck. Then, when rigging commences, these fittings are ready and waiting.

3. Deck Structures

A companionway, skylight, deckhouse, and steering wheel box are prominent deck features (Figure 5-1 and 5-2). Build them either as planked structures or substitute 1/16" or 1/32" basswood sheets. Another option is to make them from basswood blocks (not provided).

Panes for the cabin skylight can be glass (microscope slide cover) or sheet plastic with the underside painted light blue. Cut mullions and stringers from brass wire; or, fake it and paint on the dividing bars.

Fig. 5-1 Deck Structure Details

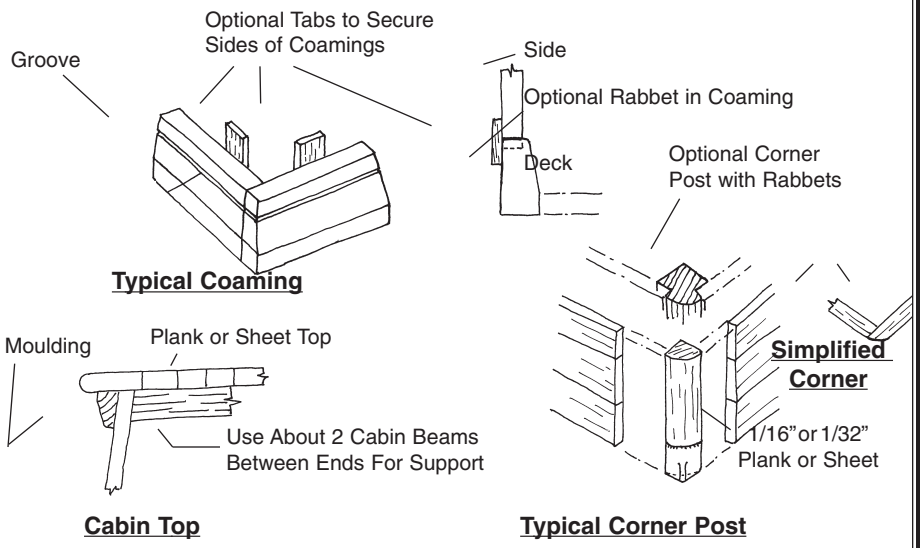


Fig. 5-2 More Deck Structure Details

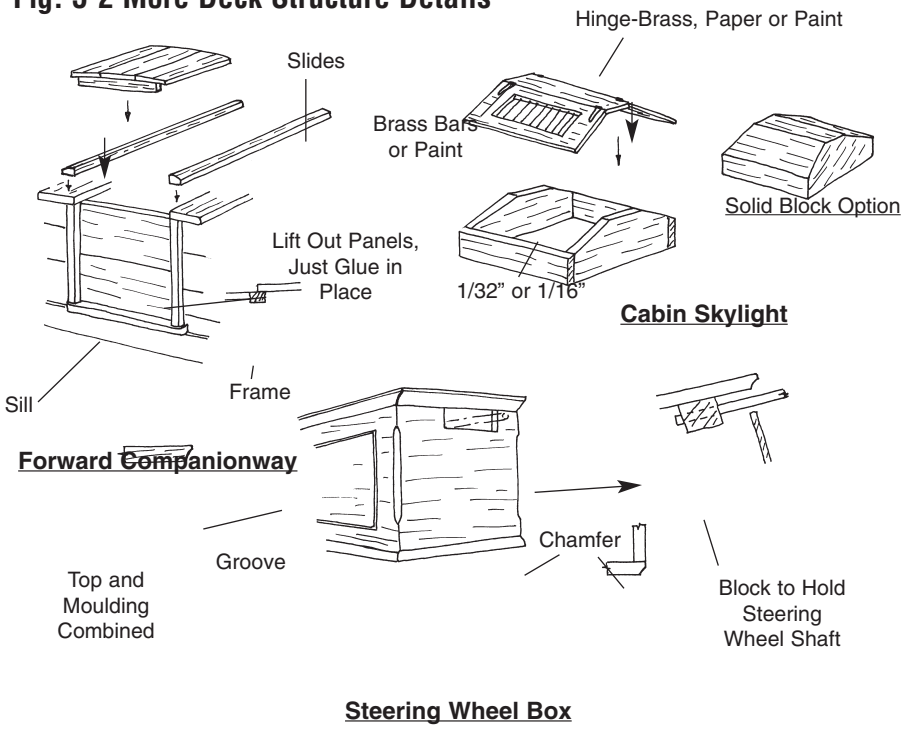
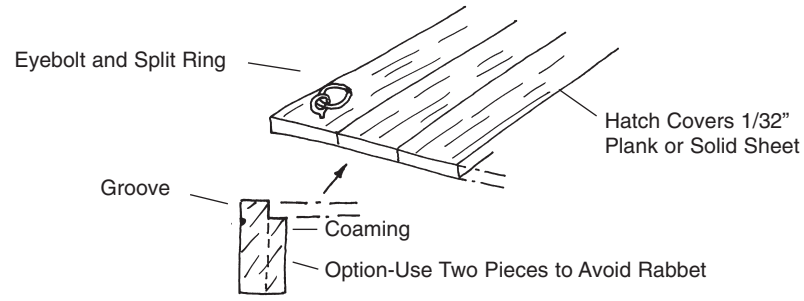


Fig. 5-3 Hatch Detail



4. Hatches

Make hatch covers as either planked structures or from 1/32" thick sheet. Dip lifting ring shafts in cyano, then insert in two diagonal corners on each cover. Don't forget the eyebolts in the deck. They secured the canvas covers that went over the hatches in bad weather (Figure 5-3).

5. Bowsprit Bitts & Samson Post

Install the samson post and bowsprit bitts, but not the filler blocks or platform (Figure 5-4).

6. Boom Sheet Buffers

The real fore and main sheet buffers have rubber rings to take the strain off the lower block. The kit provides simplified Britannia castings. Install these, then the foremast's laser-cut platform and its fore and aft legs. However, the main rail forms the main boom's platform. Both platforms have a hole for the buffer ring. Lower sheet blocks hook to the ring (Figure 5-5).

Note: The plans show the main buffer a little longer than the fore buffer. Although the kit has only one size, it fits under either platform.

7. Quarter Bitts

Drill a hole for the quarter bitts or peg them with a dowel (Figure 5-6).

8. Unidentified Object

The object to port and aft of the cabin may be a scuttle; or, more likely, a storage tub for the main sheet hauling tackle. Cut it from sheet stock and round the top edge.

9. Main Boom Crutch

The laser-cut main boom crutch fits over a flat strip with a notch. If the model is displayed with sails, either lay it on deck or omit the crutch. It is stowed when underway.

Fig. 5-4 Bowsprit Bitts & Samson Post

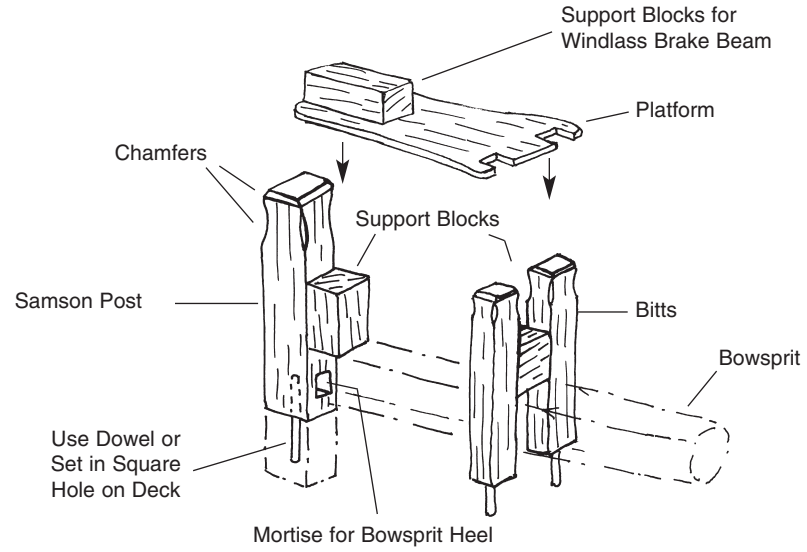


Fig. 5-5 Fore Boom Sheet Buffer

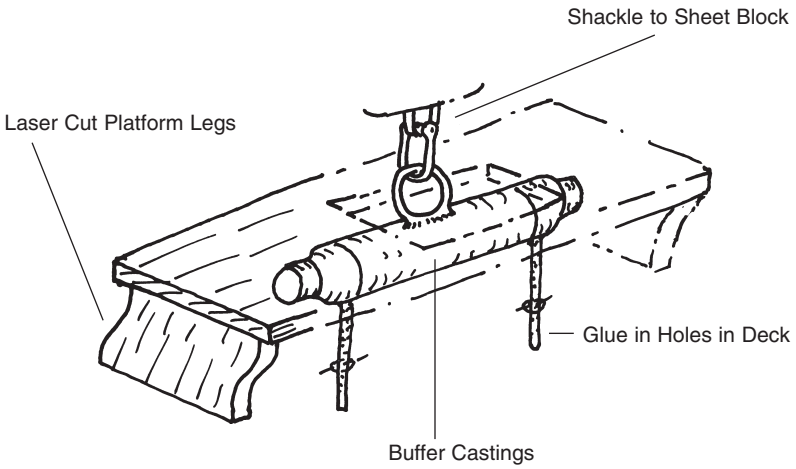
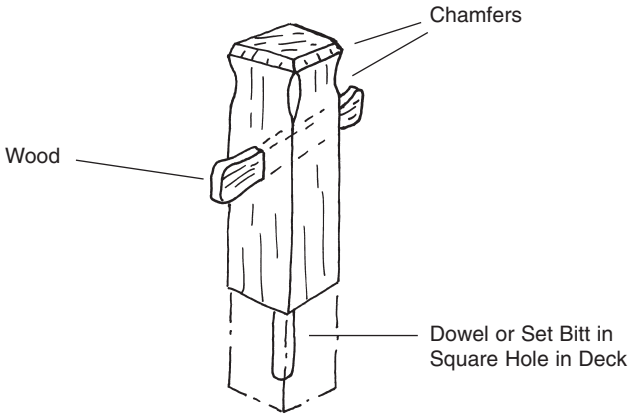


Fig.5-6 Quarter Bitts



10. Fife Rail & Fore Boom Crutch

The main fife rail, rail bar, knees, fore boom crutch, and crutch pad are laser-cut parts. Stanchions are Britannia, but make the bitts from stripwood (Figure 5-7). Drill holes and insert belaying pins.

11. Galley Stack

At the base of the Britannia galley stack is a pad. The plans show a substitute, a "Liverpool" (straight) stack, since the stack varied at times.

12. Bilge Pumps

Britannia bilge pumps are aft of the main fife rail. No levers are provided, because they are generally stowed when not in use. They can be duplicated from brass wire or strip. Drill holes in the deck to accept the pumps, then affix with cyano or epoxy.

13. Windlass, Hoisting Machinery & Jumbo Jib Boom Crutch

If configuring the model for fishing, add the Britannia windlass, hoisting machinery, and engine box. When racing, the box and hoisting mechanism were removed.

The jumbo jib boom crutch top and knees are laser-cut parts. Make the bitts from stripwood. Before installing the assembly, attach the hoisting mechanism.

Windlass: Laser-cut bitts and riding knees are split to fit around the windlass shaft (Figure 5-8). Glue on the quadrant castings. Use brass wire for the links connecting the quadrant to the brake beam on top of the bowsprit. Add the pawl on the samson post.

Although hoisting machinery doesn't need a brake, it has one for backup. Handles are stowed below, not in the brake beam.

Counter shaft and stand: The shaft, with pinion gear and sprocket, fits into two stands. If necessary, ream the holes in the stands so the shaft will fit, then glue the pieces together. Be sure the pinion engages the large gear on the windlass when gluing the assembly to the deck (Figure 5-8).

Fig.5-7 Mainmast Fife Rail

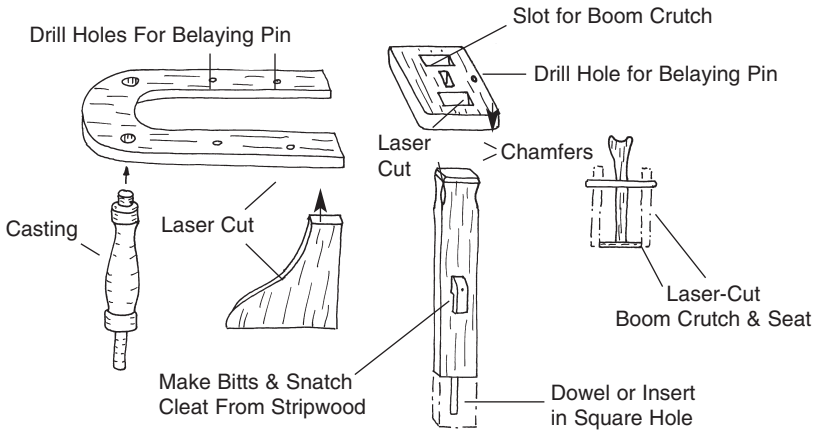


Fig. 5-8 Windlass & Counter Shaft

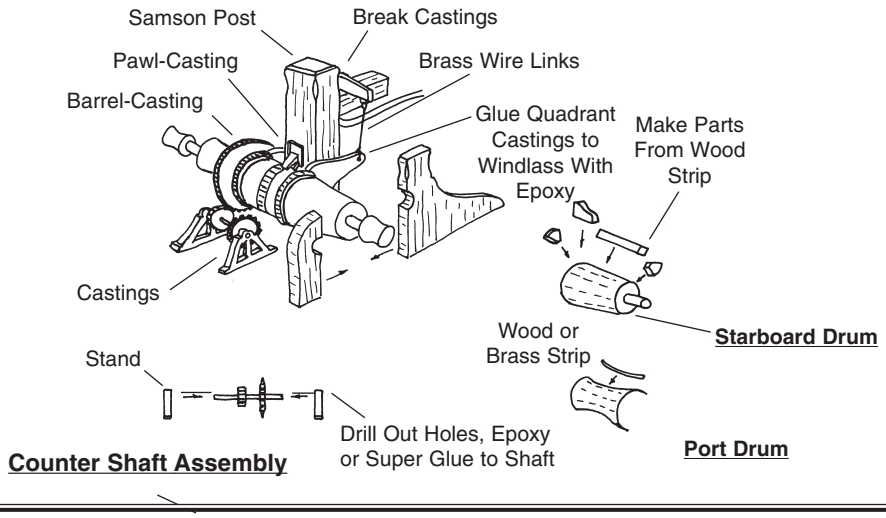
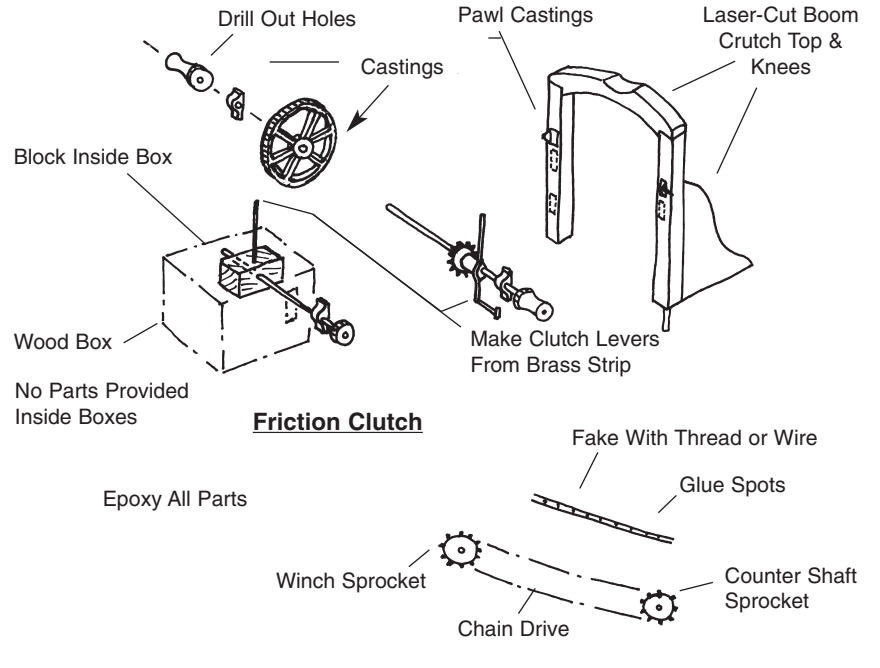


Fig. 5-9 Winch Gears & Friction Clutch



Winch shaft, gear, sprocket, and winch heads: This assembly fits on the jumbo jib boom crutch bitts. Starboard winch head, bearing, and sprocket are already on the shaft. Slide the large winch gear, bearing, and port winch head onto the starboard side. Enlarge the holes if these parts don't fit. Glue the assembly to the boom crutch bitts, then add the port and starboard winch head pawls (Figure 5-9).

Make the clutch lever from brass strip.

Clutch shaft: On the lower clutch shaft is a bearing and pinion. The pinion mates with the winch gear. The shaft goes to a clutch under the clutch box cover. However, the clutch isn't included. Simply place the shaft in the box and glue it to a block. Add a clutch lever made from brass strip (Figure 5-9).

Engine and clutch cover boxes: Make the boxes from 1/64" or 1/32" stripwood.

Sprocket chain: A single, riveted roller chain (like on a bicycle) connects the counter shaft sprocket and winch shaft. For the model, fake it using double thread or fine brass wire.

14. Catheads & Anchors

Attach eyebolts to the Britannia catheads, then make the fitting for the deck or just drill a hole in it (Figure 5-10). During a race, catheads were removed and anchors stowed below as ballast. Model Shipways' Grand Banks' anchors have Britannia shanks, but make their stocks from stripwood. The plans show how to stow the anchors, and the type and amount of cable required.

15. Mooring Chocks & Bow & Stern Chocks

Chocks are Britannia. Check the plans for their locations.

16. Hawse Pipes

Epoxy the Britannia hawse pipe lips in the predrilled holes at the bow.

Fig. 5-10 Detailing The Catheads

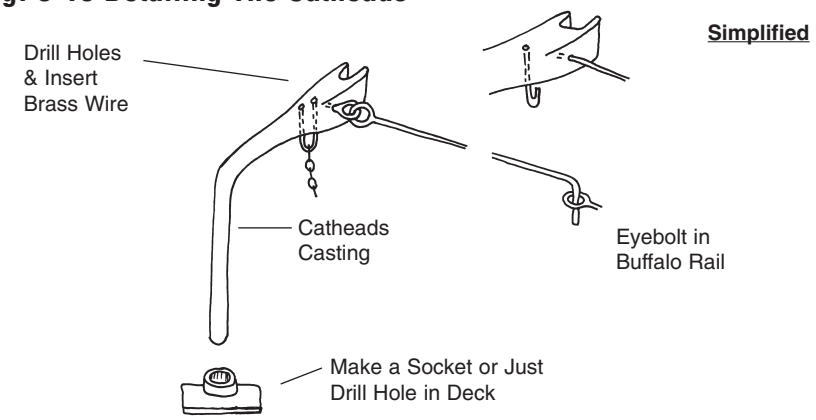

Simplified
Drill Holes & Insert Brass Wire
Catheads Casting
Eyebolt in Buffalo Rail
Make a Socket or Just Drill Hole in Deck

Fig. 5-11 Making Eyebolts

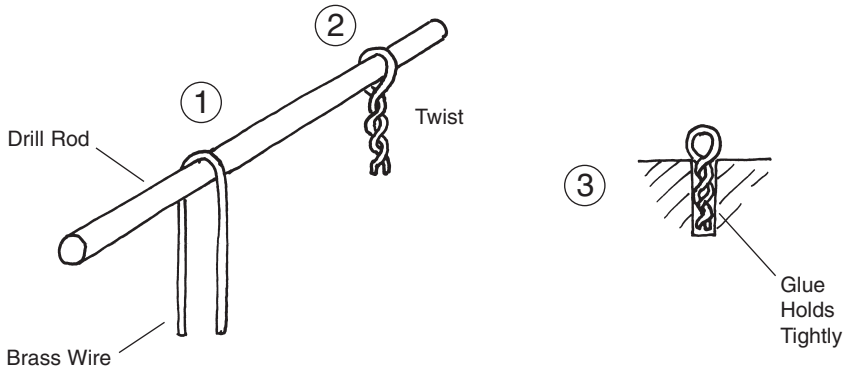
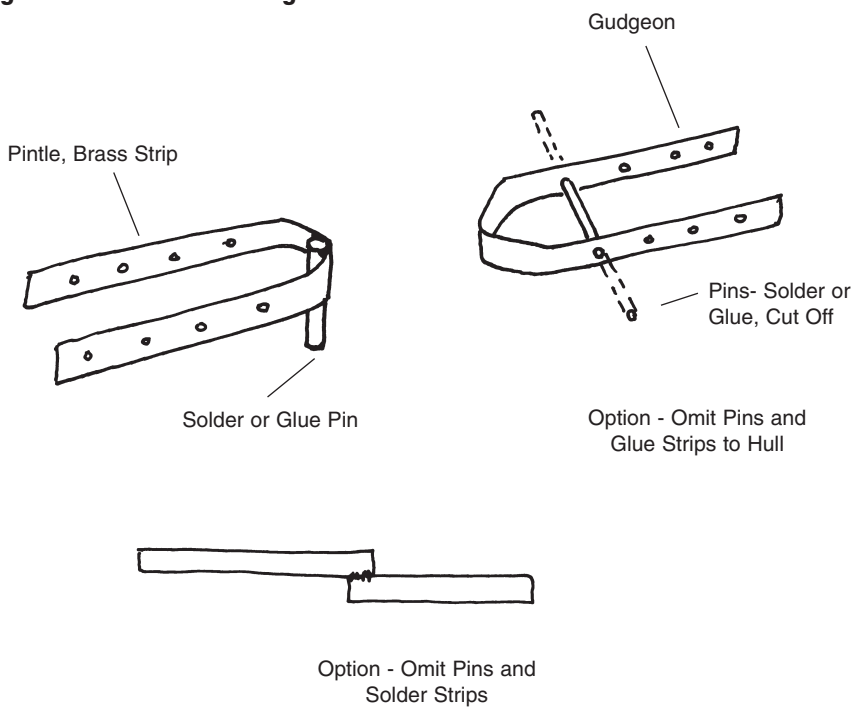


Fig. 5-12 Pintles & Gudgeons


Gudgeon
Pintle, Brass Strip
Pins- Solder or Glue, Cut Off
Solder or Glue Pin
Option - Omit Pins and Glue Strips to Hull
Option - Omit Pins and Solder Strips

17. Eyebolts & Cleats

Eyebolt locations are shown on Sheets 3 and 6. Drill a hole wherever one is required. Attach blocks to eyebolts requiring them. Using a toothpick or Microbrush, spread a thin film of cyanoacrylate on the bolt, then insert. Don't overdo the glue. When all are mounted, test the bond by tugging on each eyebolt.

Eyebolts are simply brass wire bent into a loop. To close the loop, touch with a little solder or epoxy. Figure 5-11 shows an easy way to produce scale eyebolts. The twisted wire shank traps glue and ensures a permanent bond.

18. Rudder

Taper the laser-cut rudder according to the plans. Make pintles and gudgeons from brass strip (Figure 5-12).

19. Dories & Dory Kids

Fashion the portable dory kids from stripwood, then glue or pin them to the deck. Kids and their dories were removed during racing.

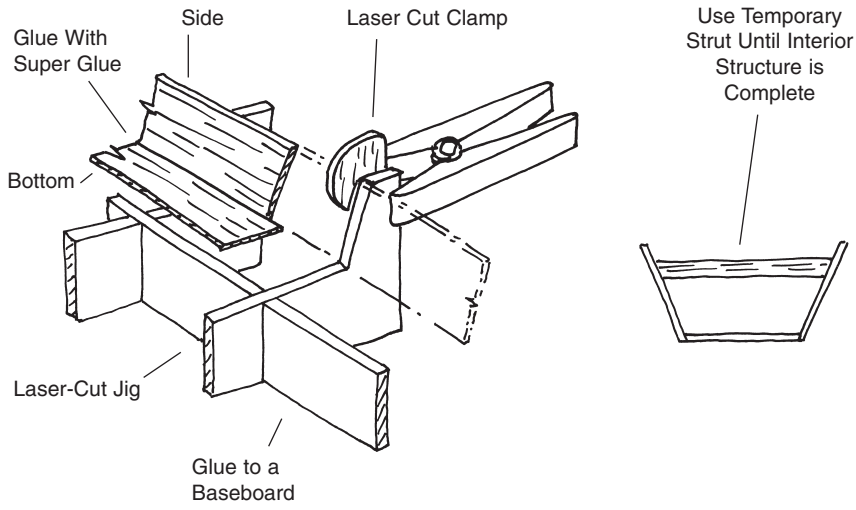
Use the laser-cut building fixture (Figure 5-13) for laying up the eight dories' sides, bottoms, and transoms. Make frames, thwarts, and oars from stripwood. Since the number of dories varied, add more or less as desired. Detail can be omitted on the lower nested boats, because it isn't visible. Stow lower boat oars and thwarts in the top boat or somewhere on deck.

Place port and starboard dory halves in the fixture, then add the bottom and transom. Hold the sides against the fixture with the laser-cut clamps. Building dories is a little tedious, but after the first or second one things should go smoothly. Using a cyanoacrylate may help. Spray on an accelerator to reduce the setting time.

20. Schooner's Name

The transom and bow carry the ship's name. The best way to add this detail is to buy dry transfer lettering (sold at art and office supply stores or model railroad shops). It probably isn't available in the correct color, so purchase black lettering, then paint over it. After rubbing them on, apply a coat of flat, clear varnish.

Fig. 5-13 Building a Dory



Another method is to make your own decals by using dry transfer letters on a clear decal sheet.

21. Flags

Although the plans don't show any, Canada's flag should fly from the flag halliard on the main gaff. Depending on how *Bluenose* is presented, racing pennants could go atop the fore and main topmast. Make flags from cloth or paper and paint them with acrylics.

All that remains is masting and rigging. Before continuing, recheck everything, sand, and paint. Painting is difficult once the spars are up, so do it now.

Stage 6

Mast & Spar Construction

1. Shaping & Tapering Masts & Spars

Dowels are provided for masts and spars, but require shaping and tapering. Sheet 4 shows them to scale with critical dimensions given at maximum diameter and at the ends.

Spar tapers: Fishing schooners are a little different from other ships. Notice on the plans that the forward side of masts, lower side of gaffs and bowsprit, and top side of booms is a straight line. This is done to better match the sail or position mast hoops. All other faces are tapered.

To avoid confusion, identify the straight side on each spar with a pencil mark at both ends. Taper the dowel with a file. Or, lightly slice it with a hobby blade or small plane, then sand to its final shape. Using a lathe or electric drill to taper these dowels doesn't work due to the straight edge.

2. Building & Installing the Masts

Fore and Mainmasts: Both lower masts are basically round, except for the flat area by the trestle trees and cheeks. A more pronounced taper occurs from the trestle trees to the tenon at the cap (Figure 6-1).

*Fore and Main Topmast*s: These are square at the heel, then round above. Drill a hole in the heel, then file it rectangular to accept the fid (prevents mast from falling through the top). A fid is a rectangular bar (Figure 6-2).

*Trestle Trees and Spreader*s: Fashion trestle trees and spreaders from stripwood. Between the spreaders is a brass rod (Figure 6-3).

Pin Saddle (foremast) and Boom Rest (main mast): These are laser-cut, port and starboard halves. Make the chocks from stripwood (Figure 6-4).

Metal Fittings: Duplicate ironwork on masts, booms, gaffs, and bowsprit from brass strip and eyebolts. Refer to (Figure 6-5) for details and procedures.

Mast Hoops: Slip on the laser-cut hoops. Forget them now and they're impossible to install later.

Mast Assembly: Once every part has been prefitted and mast hoops slipped on, assemble trestle trees and spreaders on the lower masts, then add the topmasts.

Option: Some modelers prefer to build mast assemblies as they rig. Step lower masts, attach shrouds and lower stays, then add the topmasts. Be sure to constantly check alignment.

Mast Heel Tenon: For those who placed a flat piece over the mast slots on the center keel (Stage 1, Step 9), cut mast heels in a rectangle to fit the slot.

Mast Wedges and Mast Installation: Step masts in the center keel slots and check their alignment. Wedge as necessary. Don't glue them! They may have to be removed for restoration in years to come.

Laser-cut port and starboard rings represent mast wedges covered with a mast coat (canvas). Shape the rings and slip them around the masts. Secure to the deck with a touch of woodworker's glue.

3. Building & Installing the Bowsprit

The bottom of the bowsprit is a straight line. The spar is round forward of the bowsprit bitts and square with chamfers aft. Cut a tenon to fit the mortise in the samson post.

Installation: Slide the bowsprit through the bow opening into the samson post mortise, then glue the filler blocks on top of it. Now complete the laser-cut platform (Figure 5-4).

Fig. 6-1 Mast Head

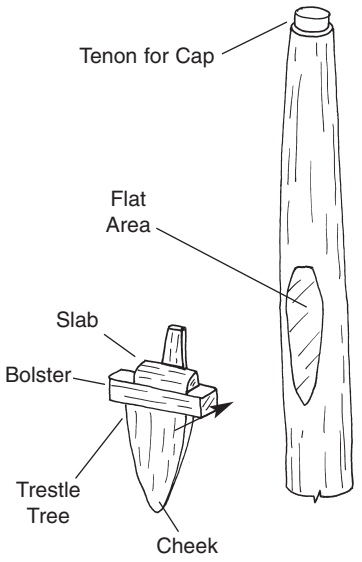


Fig. 6-2 Topmast Heal

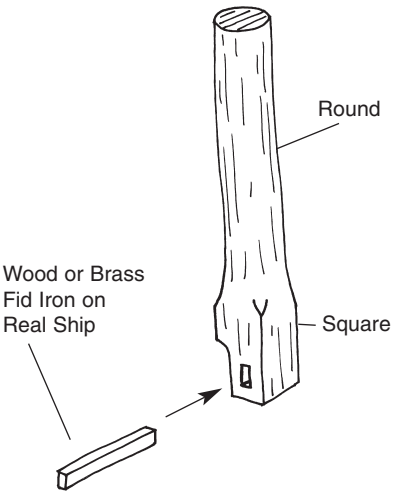


Fig. 6-3 Trestle Trees & Spreaders

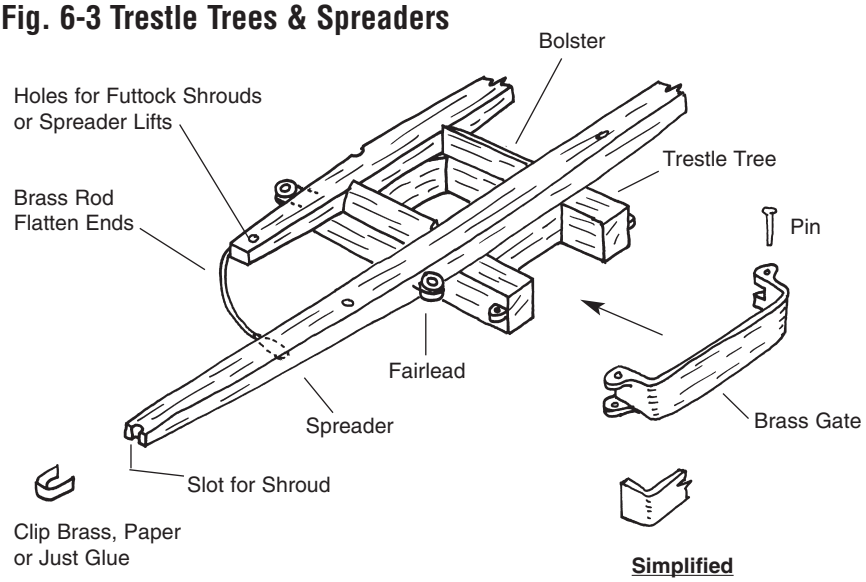
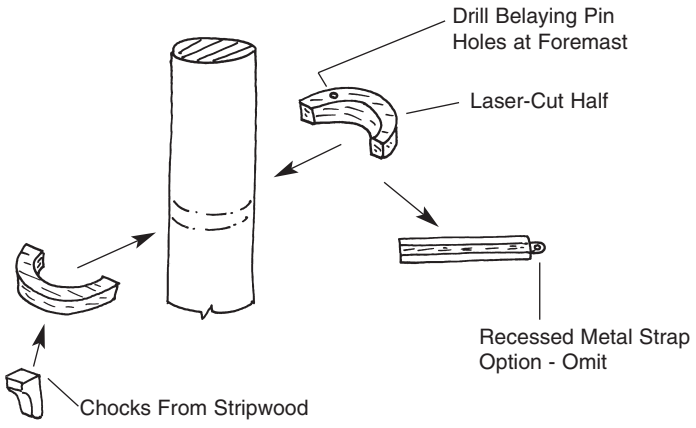


Fig. 6-4 Fore Pin Saddle & Main Boom Rest



4. Building the Booms & Gaffs

The jumbo jib and fore booms have metal fittings at their forward ends. The main boom and fore and main gaff have laser-cut jaws. Form a curve at the gaff jaw's throat (Figure 6-6).

Installation: Rigging in hand is easier than when spars are on the model, so don't install the booms and gaffs until the sails are laced or other rigging applied.

Reminder: Finish detailing and painting the spars before setting them aside. Once rigging commences, they must be ready to mount.

Stage 7

General Rigging & Sailmaking Information

Newcomers to the nautical world should learn the following rigging nomenclature. Old salts can skip this part and grab a mug of grog. Because *Bluenose* has no square sails, many terms don't apply, but may come in handy on your next project.

Each edge and corner of a sail has a name. On a fore-and-aft sail, the top is the *head*, bottom the *foot*, aft side the *leech*, and forward side the *luff*. The forward lower corner is the *tack*, aft lower corner the *clew*, forward upper corner the *throat*, and aft upper corner the *peak*. A triangular sail is similar, except the upper corner is called the head. It has no throat or peak.

Cringles, sewed into corners of sails or elsewhere, are metal thimbles to which lines are attached. They are named per their location; for example, clew cringle. *Grommets* are either buttonhole-stitched round holes in the sail or brass grommets. They are used to pass a line through the sail. Sails are *bent* to their yard, stay, gaff, or boom.

Standing rigging: Fixed lines supporting masts and spars. Standing rigging is generally wormed, parceled, and served with a light line. It also is tarred; hence, its black or dark brown appearance.

Fig. 6-5 Making Metal Fittings From Brass

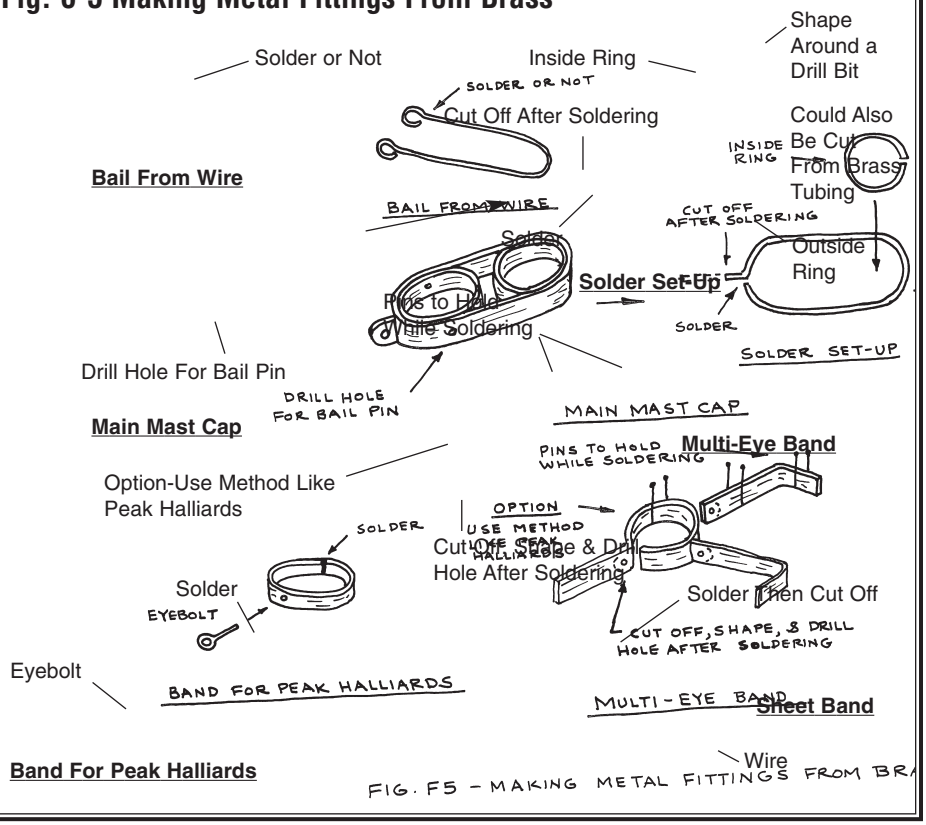
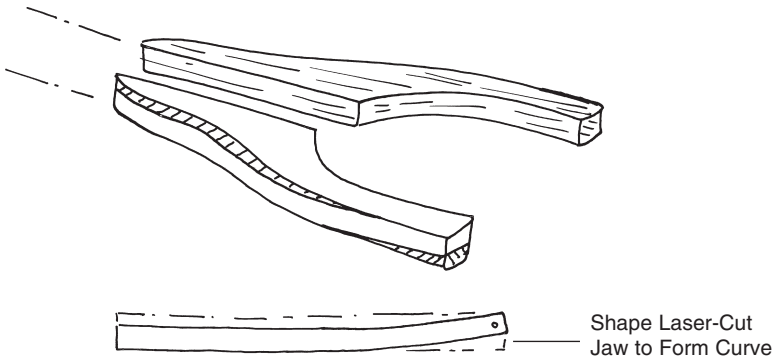


Fig. 6-6 Gaff Jaws



Shrouds: Transverse lines supporting masts. *Deadeye*s are wood and have three holes for reeving the *lanyard*. *Lanyards* are lines used to tighten shrouds. On modern ships, metal *turnbuckles* have replaced deadeyes. A *heart* or *bullseye* is similar to a deadeye, except it has one hole and is used on more permanent installations.

Chain plates: Iron bars or rods on the hull for holding deadeyes. Topmast shrouds have no chain plates. Instead, *futtock shrouds* (lines or metal bars) run from the deadeye or bullseye to the mast band. If the futtock shrouds extend just to the lower shrouds, they generally tie to a wooden or metal rod called a *futtock stave*. *Catharpins*, lines keeping the futtock shrouds taut, brace in the lower end of the futtock shrouds and secure to the futtock staves.

Stays: Fore and aft lines supporting the masts. *Backstays* provide side and aft support. They are generally angled slightly aft. A *running* or *flying backstay* has a movable tackle on deck.

Bobstays: Support the bowsprit from upward loads. *Bowsprit guys*, sometimes called *bowsprit shrouds*, support jibbooms and bowsprits from side forces. Bowsprits occasionally have a vertical strut below the jibboom cap to increase the stays' downward pulling force back to the hull. This strut is the *martingale* or dolphin striker. Head stays run through the jibboom, down to the *dolphin striker.* Head stays run through the jibboom. down the dolphin striker, and back to the bow. *Martingale stays* are separate, and start at the jibboom rather than continuing from the head stays.

Running rigging: Lines that move, reeve through blocks, or operate sails and spars.

Blocks: Wooden or metal shells with sheaves (pulleys) for handling lines. A *purchase* (tackle) consists of several blocks and a line to provide a mechanical advantage for handling sails and spars.

Halliards or halyards: Lines for raising and lowering a sail, yard, boom, gaff, or flag. The part of a halliard attached to a yard is called a *tye.* For gaffs, the outer halliard is the *peak halliard*. At the gaff jaws is a *throat halliard*, named for the part of the sail it operates. *Downhauls*, *outhauls,* and *inhauls* drag a sail along a boom or up and down a stay.

Sheets hold the lower corners of a sail or boom. When not in use, sails are furled (bundled on the yard, boom, or mast). *Clew lines* pull up the corners of a square sail, *leechlines* pull up the sides, and *buntlines* pull up the belly for furling the sail. *Brails* are like buntlines, except they pull loose-footed fore-and-aft sails toward the mast for furling. Bowlines, attached to the sides of a square sail, pull it forward. These are used primarily on 18th century and older ships.

Reef bands: Horizontal reinforcing bands on the sail. They have short lengths of rope called *reef points*. In heavy weather, sailors tie the reef points to a yard or boom to shorten the sail.

Parrels or parrals: Lines or devices for holding yards, booms, and gaffs to their respective masts and spars. A *truss, jeer,* and *sling* are similar to a parrel. These lines or iron fittings hold a yard up against the mast. They are most common on lower yards, which generally don't move up or down.

Fig. 7-1 Seizing The Lines

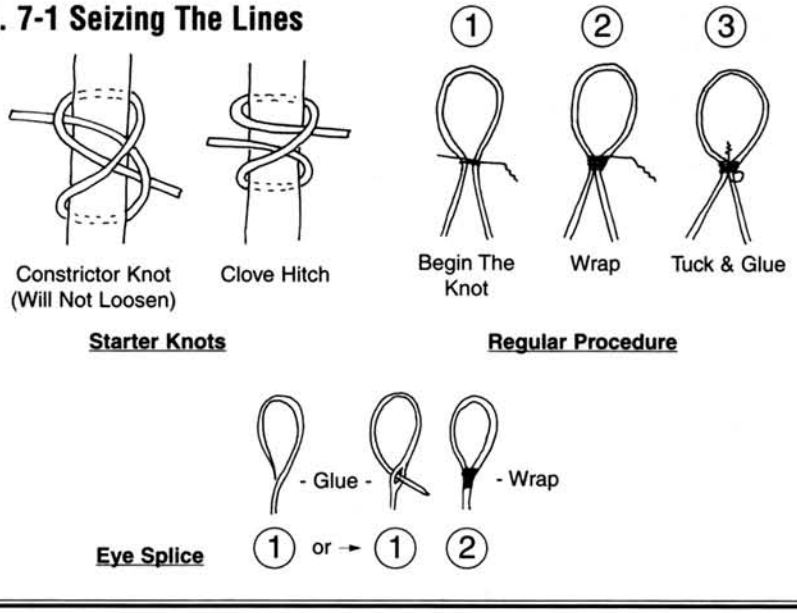


Fig. 7-2 Homemade Rigging Tools

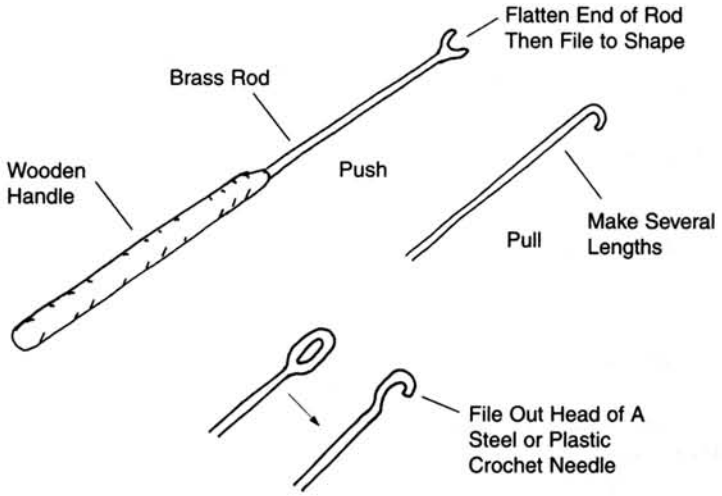
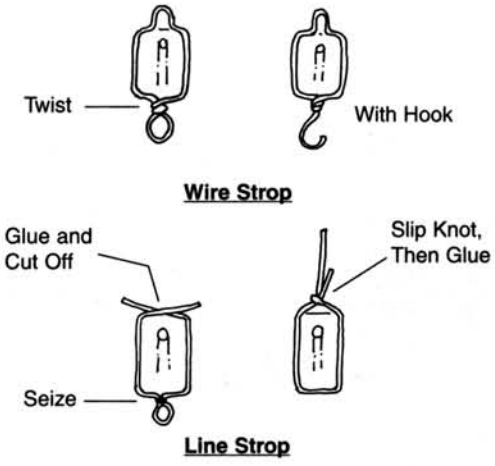


Fig. 7-3 Stropping Model Blocks



Braces: Lines attached to the ends of yards for directing their angles and holding them taut. *Lifts* are standing or running lines for holding yards when lowered. A *topping lift* is a line holding up the boom when the gaff is down or absent. *Vangs*, port and starboard lines, prevent a gaff from swinging sideways.

1. Rigging Options

Like the real ship, the model can be rigged four ways. Consider these options:

Full set of sails: Tends to hide detail.

Sails furled: Here is a pleasing compromise. Reality is maintained without sacrificing detail.

Sails furled and hoisted: This creates the illusion of a ship in port with some sails still drying after a day's run. Mix furled sails with open ones or sails half up. Possibilities abound, so look for a pleasing effect. Study paintings for ideas. Marine artist John Stobart's work is an ideal reference.

No sails, gaffs lowered on the booms: Now the ship is in port with her sails removed for repairs. Most modelers choose this approach, and beginners should definitely opt for it.

2. Rigging Plans

Sheets 5 and 6 show the masts and spars with attendant rigging. They are drawn so every line is clear and its belaying point known. Study them and have a complete picture of each rig before starting. Do this and rigging will proceed smoothly.

3. Rigging Line and Block Sizes

Because more line diameters are shown on the plans than provided in the kit, refer to this guide:

Lines on plan	Lines in kit
Less than 0.012″dia.	0.009″
0.012″ to 0.018″dia.	0.017″
0.020″ to 0.027″dia.	0.030″

Use every available diameter to enhance the model's scalelike appearance. Additional sizes are commercially available. Some modelers substitute the kit's nylon cordage with linen or cotton lines. Blocks are in scale inches, but not all are commercially available. Follow this guide:

Block Sizes	Blocks in Kit
3/64″ to 3/32″	3/32″
7/64″ and 1/8″	1/8″
9/64″ and 5/32″	5/32″
11/64″ and 3/16″	3/16″
13/64″ and 7/32″	1/4″

Options: Sand a block to more closely match the plan size or scratch build them.

4. Treating the Lines

Note: Standing rigging on *Bluenose* was wire, but the kit substitutes thread.

Fig. 7-4 Making a Set Sail

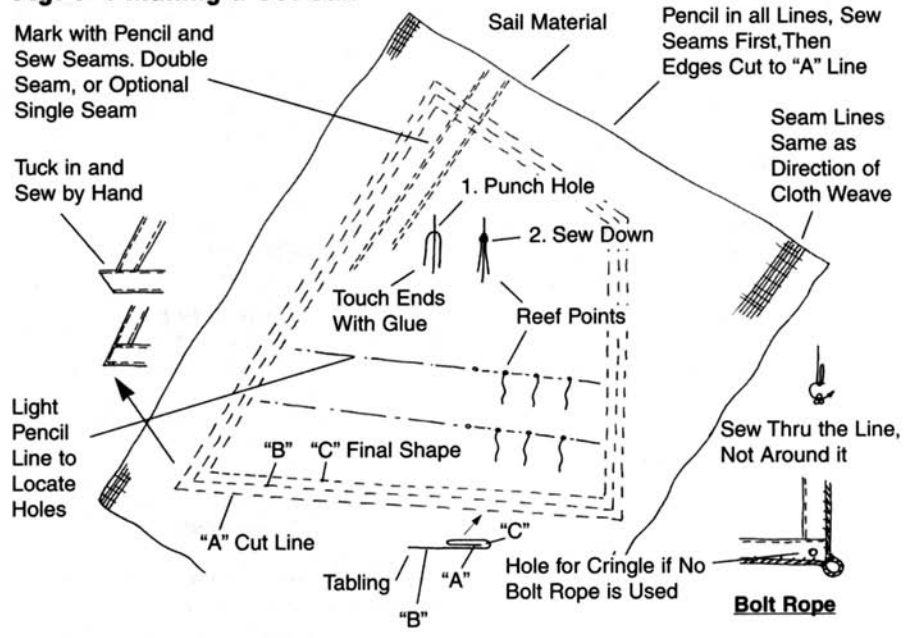
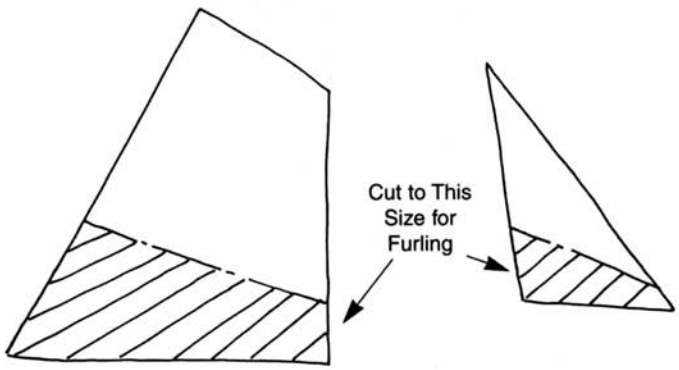

Mark with Pencil and Sew Seams. Double Seam, or Optional Single Seam
Sail Material
Pencil in all Lines, Sew Seams First,Then Edges Cut to "A" Line
Seam Lines Same as Direction of Cloth Weave
Tuck in and Sew by Hand
1. Punch Hole
2. Sew Down
Touch Ends With Glue
Reef Points
Light Pencil Line to Locate Holes
"B" "C" Final Shape
Sew Thru the Line, Not Around it
"A" Cut Line
"C"
Tabling
"A"
"B"
Hole for Cringle if No Bolt Rope is Used
Bolt Rope

Fig. 7-5 Making Sails for Furling



Worming, Parceling, and Serving: Lines on ships were wormed, parceled, and served wherever chafing might occur. Shrouds are a prime example. Worming inserts thin pieces of line (worms) between the strands. Parceling winds canvas strips saturated with tar around the wormed part. Happily, this isn't necessary on the model. Most modelers prefer not to serve (binding the wormed and parceled area in the opposite direction with spun yarn). They use cordage as is after applying a heavy coat of beeswax. Those who want to should serve only the largest shrouds and stays. Use fine silk or linen thread. Avoid cotton. It's too fuzzy.

Seizings: Seize lines with cotton, nylon, or silk thread. Do not secure lines with knots. Knots are for shoelaces. Touch seizings with diluted white glue (Figure 7-1).

Beeswax: Protects lines against moisture and lays down fuzz. To soften beeswax, hold it to a light bulb. Run the line across the beeswax, then through your fingers to soften and smooth it. Do this several times to thoroughly coat the line.

5. Belaying Pins

Sheet 6 includes a complete belaying pin plan. Each belaying point and its appropriate line have the same number. Some lines run through fairleads before they belay. Sketches on the plans show which lines have fairleads.

Because no belaying plan exists for *Bluenose*, general fishing schooner practices were followed.

6. Rigging Tools

Some homemade tools are essential for the rigging process (Figure 7-2). Similar shapes are commercially available.

7. Blocks & Deadeyes

Bluenose had internally stropped blocks. This is difficult to do at 3/16" scale. Figure 7-3 offers some alternatives.

8. Sailmaking

Choosing the proper material is critical. Sailcloth must be lightweight, yet fairly opaque. Tightly woven cotton is acceptable and available from Model Expo (MS0567). Although linen is ideal, most is too heavy for 3/16" scale models.

Wash sailcloth several times to preshrink it. When dry, iron the cloth, but be careful not to scorch it. Next, lightly draw the seams and hem (tabling) lines in pencil, then sew the seams using light tan cotton thread. A sewing machine makes fast work of the project. Practice on scrap cloth. Balance the needle thread tension so it doesn't pucker the material. No reinforcement patches are required. Instead, simply sew two lines to represent reef bands (Figure 7-4).

When done, iron the sails. Be careful not to burn them. Next, cut the sail shape using Line A in Figure 7-4. Fold the hem, iron it flat, and sew as close to Line B as possible. Tuck the ends and hand stitch the corners. The sail is ready for stretching.

Sewing Aids: Visit a fabric shop and purchase a bottle of *Fray-Chek*. Running or brushing it along the edge of the cloth prevents the material from unraveling when cut and produces a sharp edge. Apply it to the sail before rolling the hem.

Stitch-Witchery and Wonder-Under are basically the same product. They are heat fusible bonding tapes. *Stitch-Witchery* comes in a roll and is bond sensitive on both sides. To join two pieces, simply place a strip between them and iron.

Wonder-Under comes in sheets with a thin, paper backing on one side. This material is useful for bonding letters and numbers to a scale sailboat's sail. First, buy the colored fabric for the numbers. Place the *Wonder-Under* sheet on the cloth with the paper backing up. Iron the sheet to bond it to the material. Next, cut out the letters, numbers, logo, or whatever with scissors or a sharp blade. Peel off the paper backing, position the letter on the sail, and iron. This technique also works for making flags from colored cloth.

When racing, *Bluenose's* mainsail carried an arabic "1" or "2" near its head.

Stretching the Sails: This step assures the sail's proper shape, since sewing may have altered it. Using the original pattern, trace the sail's outline onto a piece of paper. Place the paper on a solid, but porous backing, such as a wood or cork board. Now wash the sail again and lay it over the outline. Stretch the wet material to the sail's outline, then secure with stick pins through its outer edges. When dry, the sail will have resumed its proper shape. Iron it one more time.

Boltropes and Reef Points: Boltropes can be omitted, since they are nearly invisible at 3/16" scale. However, to include them, follow the tedious method in Figure 7-4. The sketch also shows how to install reef points.

Furled Sails: Don't furl sails made from sailcloth and cut to the original's scale size. The material is usually too heavy, resulting in a bulky furled sail. To solve this problem, either proportionally reduce the size of a sail by one-third when using sailcloth (Figure 7-5), or buy a lighter material such as Silkspan (model airplane covering tissue). Depending on their size, even Silkspan sails may require being reduced by one-third. Test the percentage reduction to determine how much material is needed for a neat, tight furl.

Even furled sails need some seams and hems, as these details are visible.

9. Rigging the Model Without Sails

Include most of the lines, such as halliards and downhauls, that remain when sails are removed. These are shackled together, tied off, or secured to some other stowage point. Sketches here and on the plans show some details.

Stage 8

Standing Rigging

Standing rigging is black. Before starting, sort lines by size, coat with beeswax, and keep them handy. Use cotton, silk, or nylon thread for seizings. Treat this with beeswax. Keep white glue at the ready for dabbing on a seizing if necessary. Usually sewing through the shroud followed by a half hitch will prevent a seizing from unraveling.

Shackles: These are difficult to make at 3/16" scale, so substitute a split ring.

1. Shrouds

Begin the standing rigging by making the lower shroud chain plates from brass strip (Figure 8-1).

The lower shrouds are set up in pairs (Figure 8-2). To do this, make a temporary brass wire fixture to space the deadeyes as seizing progresses (Figure 8-3). The fixture should be longer than the final spacing of deadeyes. Reeving the lanyards will tighten the shrouds to their final proper spacing. Make a test shroud first to see how much it stretches.

Figure 8-3 also shows the sequence for reeving lanyards. When looking outboard at any deadeye, always start with a knot in the upper left-hand deadeye hole. Consequently, port deadeyes have the knot aft and starboard deadeyes have it forward. Keep an eye on the masts. Rigging the shrouds can pull them out of alignment.

Note: The upper deadeyes (laser cut) on the lower shrouds are oval. On the real vessel, wire rigging is spliced just above the upper deadeyes. Wrap thread around the shrouds to simulate the splice.

Shrouds for the fore and main topmast run through spreaders, then set up at the hull. They have smaller deadeyes.

Main topmast shrouds start at the spreaders and set up to futtock shrouds (Figure 8-4). Make the futtock shrouds from brass wire.

Spreader lifts replace the fore topmast shrouds (Figure 8-5).

Once the shrouds are up, add the ratlines (Figure 8-6). Make the sheer pole from brass wire, then paint it.

Before installing the ratlines, give them a generous coating of beeswax. This will help hold them in a slight downward curve. If the ratlines tend to bow up, tug them gently into position. Touching the loops with white glue will help freeze them. Ratlines are difficult to do if tied with clove hitches. Use half hitches and avoid pulling the ratlines too tight, thereby altering the spacing between shrouds. The step or space between ratlines should be a scale 14 to 15 inches.

Note: Ratlines on the upper main topmast shrouds do not extend to the top, so a crew member can furl topsails at the lower masthead.

2. Fore & Aft Stays

Install the fore and aft stays unless an optional method was selected. Be careful not to pull the masts out of alignment. Begin with the forward lower stays and work aft and up.

The jumbo jib stay sets to a bail bolted to the deck. Make it from brass wire (Figure 8-7). The jib and balloon stay belay to fittings on the bowsprit.

Fig. 8-1 Lower Chain Plates

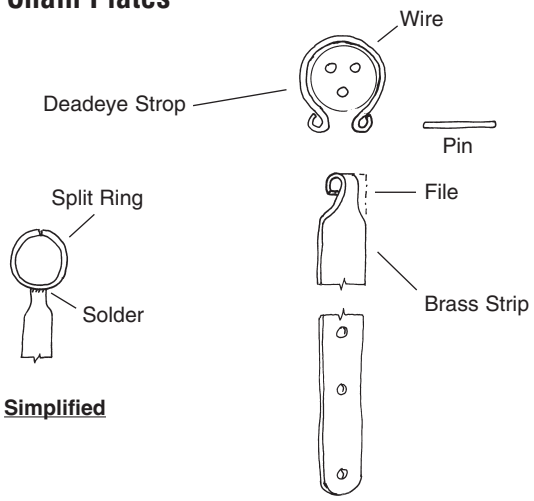


Fig. 8-2 Lower Shroud Sequence

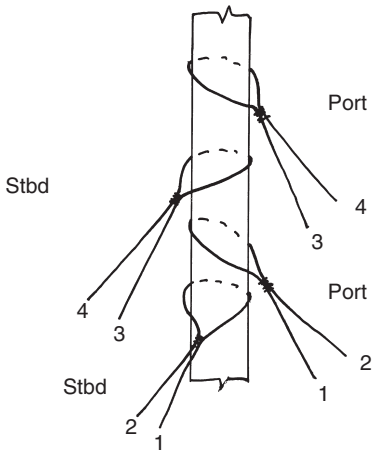
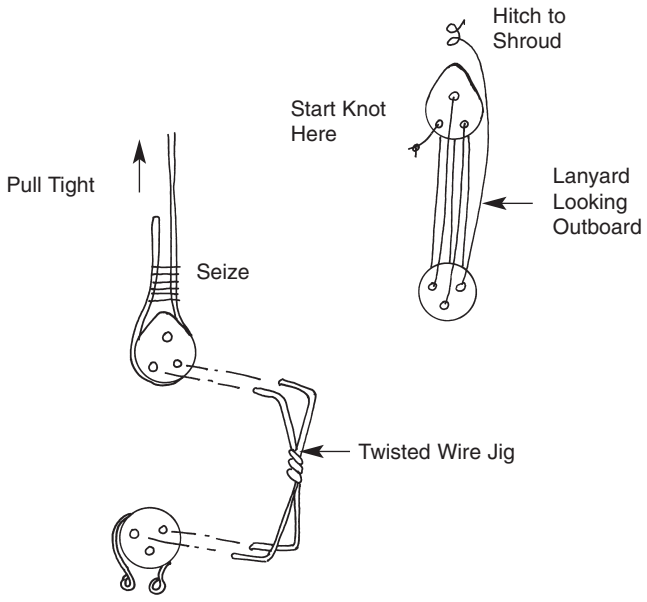


Fig. 8-3 Setting up Shroud Deadeyes



The pullback stay and main topmast stay have a lanyard at one end to tighten the stay. While details heighten a model's appearance, these lanyards can be omitted and the stays simply seized to the fitting. The spring stay has an eye splice at both ends. It belays to the bails.

Topmast Flying Backstays: During races, a port and starboard main topmast flying backstay was rigged. Those who are building *Bluenose* in this configuration can install one backstay tight and the other slack.

3. Bowsprit Rigging

Backropes, guys, and bobstays are tightened with turnbuckles. Make them from brass (Figure 8-8), along with the bobstay and guy plates (Figure 8-9).

4. Footropes

The bowsprit has footropes and stirrups, but the main boom just has footropes. Apply a heavy coat of beeswax to coax these lines into pleasing curves. Freeze them with a touch of white glue if necessary. Footropes that don't droop properly look awful.

5. Running Lights

Glue the Britannia running lights to a flat piece of stripwood, then attach the board to the fore shrouds (Figure 8-10).

Take another look before moving on. Check that a mast wasn't pulled out of alignment. Now is the time to correct any mistakes.

Stage 9

Running Rigging

Decide whether to rig with or without sails or with a few furled. The following discusses the choices and how to rig them. Although the rigging sequence isn't critical, starting at the bow and working aft is recommended.

Fig.8-4 Futtock Shrouds at Main Mast

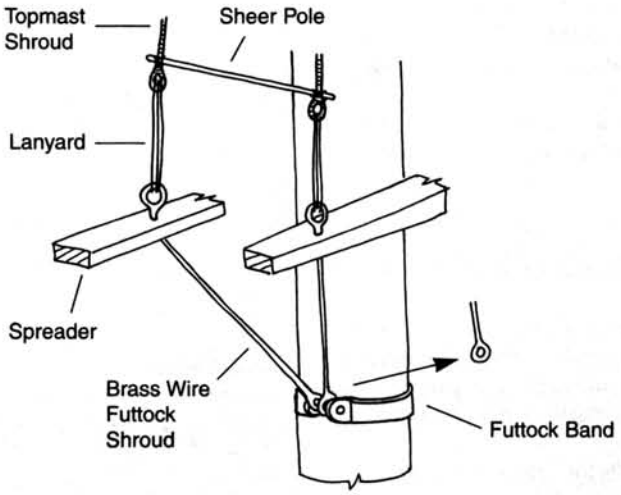


Fig. 8-5 Spreader Lifts at Foremast

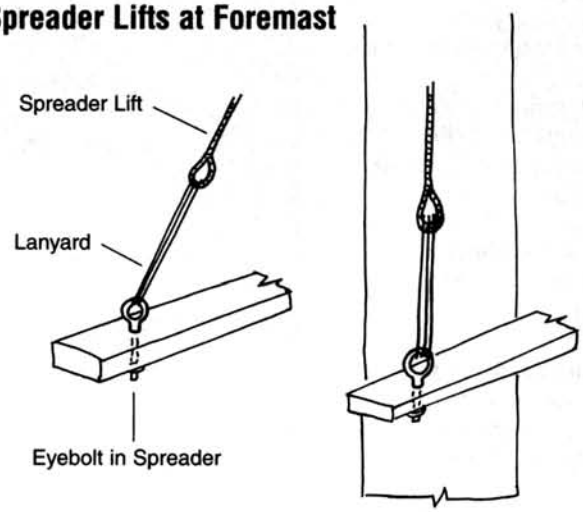
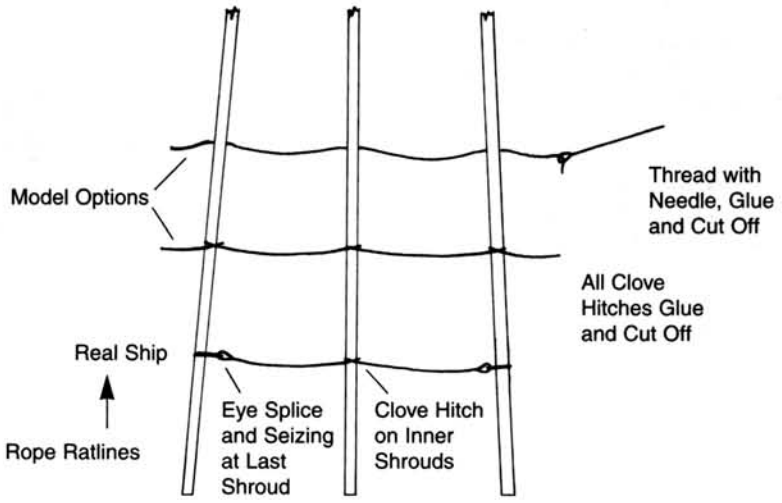


Fig. 8-6 Ratlines


Model Options
Thread with Needle, Glue and Cut Off
All Clove Hitches Glue and Cut Off
Real Ship
Rope Ratlines
Eye Splice and Seizing at Last Shroud
Clove Hitch on Inner Shrouds

Attach as many lines as possible to sails or spars before mounting on the model. Play out enough line for reeving, handling, and belaying. Don't be in a hurry to snip them flush. They may need retensioning as rigging progresses.

Sheet 6 contains the belaying plan. Belay the line, then add a coil to each belaying point.

1. Jumbo Jib, Jib & Balloon Jib

Installing sails: Substitute split rings for hanks. Real hanks are difficult to make at 3/16" scale. Set sails either to port or starboard, but be consistent. It looks better.

Jib and Balloon Jib: Fit halliards and tacks tightly. Downhauls can be either tight or hung a little loose. Tighten the sheet on the sail side. The other sheet drapes over the stay and hangs loosely toward the belaying points. Again, apply a heavy coat of beeswax so these lines droop on command.

No sails: Bring down the halliard block with the downhaul attached (Figure 9-1). Sheets are removed with the sails or left lying on deck.

Jumbo Jib: Lace the sail to the boom by a method shown on the plans. Sheet and halliards set up tight.

Hook the topping lift to the end of the boom. However, because it also serves as a fish tackle (hoists anchors), it could hook to the eyebolt in the buffalo rail.

No sail: Set the boom in its crutch, tighten the sheet, and bring down the halliard block.

2. Staysail

Tighten the staysail's sheet, halliards, and tack. Notice the unique racing halliard. Install it or the simpler fishing halliard.

No sail: Bring the peak halliard block to the foremast and hook it to the throat halliard (Figure 9-2). Remove the sheet and tack.

3. Fore & Main Topsails

Seized them to the mast hoops (Figure 9-3).

Fore Topsail: It has a double sheet and tack. Tighten one, then run the loose partner over the main topmast stay so the sail can be set on either side.

Fig. 8-7 Jumbo Jib Stay Bail

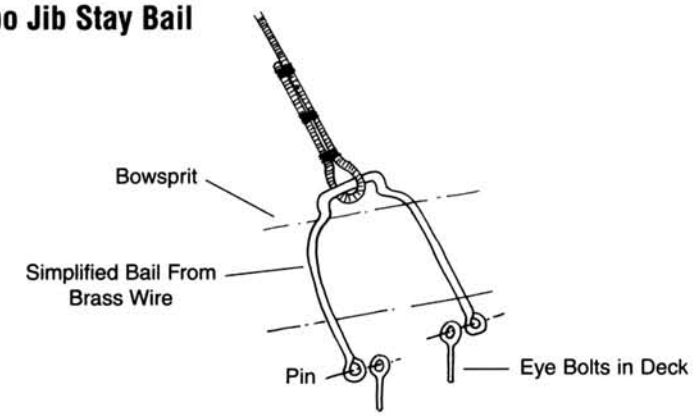


Fig. 8-8 Fake Turnbuckles

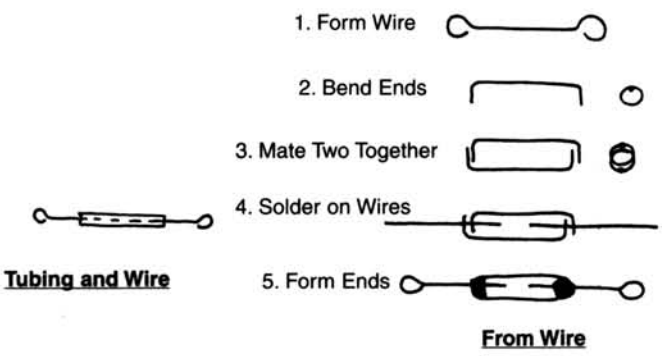


Fig. 8-9 Bobstay and Guy Plates

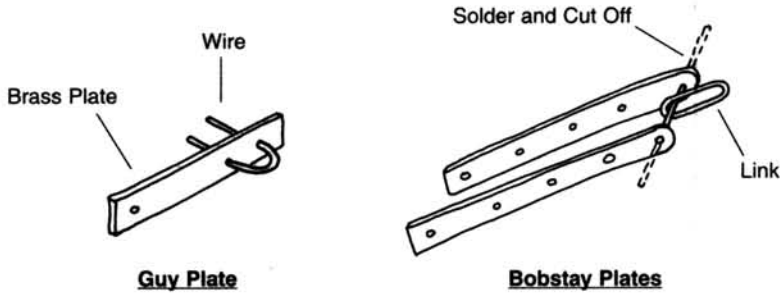
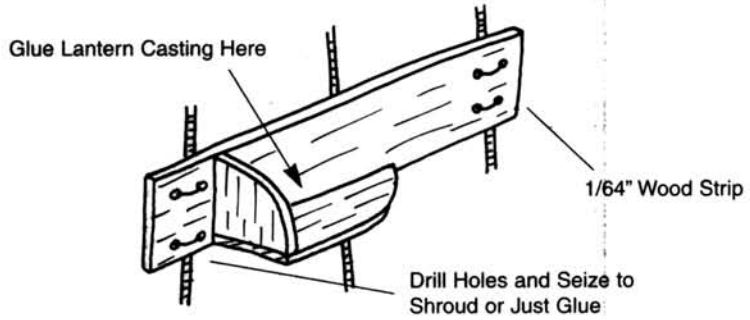


Fig. 8-10 Running Lights



*Main Topsai*l: It always sets on the port side of the main peak halliards, but with the tack over the main gaff on the starboard side. This sail has one sheet and tack. The clewline feeds through fairleads and blocks.

No topsails: Hook the sheets to the halliard, bring them to the mast, and hook somewhere at the masthead.

4. Fore & Main Sails

Lace the sails to the boom and gaff and to the mast hoops. Note: Double hoops provide added strength near the boom. When in place, add the parrels to the main boom jaws and fore and main gaffs. The fore boom sets to a gooseneck.

Foresail: Attach the boom tackle per the plans. Hook the topping lift to the end of the boom. Reeve the peak and throat halliards, then the sheet, and tighten in the correct position. Add the downhaul at the end of the gaff.

No sail: Rest the boom in its crutch. Lower the gaff on top of the boom and stack the mast hoops in a pile. Lash the gaff to the boom with short lines. Remember, peak and throat halliards are longer when the gaff is down, so play out plenty of line.

Although not usually done on real ships, one option is to leave the gaff up. Some modelers like to fill the space with something.

Mainsail: Rig the mainsail like the foresail except for the topping lifts. Port and starboard quarter lifts are primarily for racing. At mid height on them is a line functioning as a lazy jack (contains sail and keeps it off the deck when furling). The main topping lift is mostly for fishing, but has been used with the quarter lifts during races.

Baggywrinkle is on the main topping lift and quarter lifts. This fuzzed-up rope prevents chafing. Simulate it by gluing on some cotton or other material, then painting it to look like rope.

No sail: Lower the gaff, set the boom in its crutch, and add the crutch's port and starboard tackle. Note: The plans show two types of boom crutch tackle. Both could be used for fishing, but the chain version is more common.

Fig.9-1 Jib and Balloon Jib Halliards - No Saill

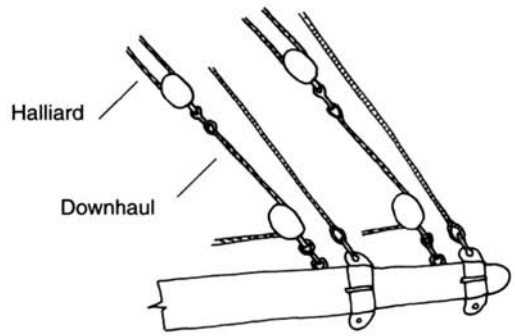


Fig.9-2 Staysail Removed

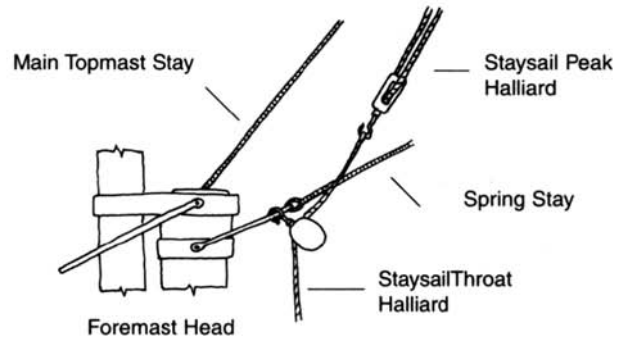
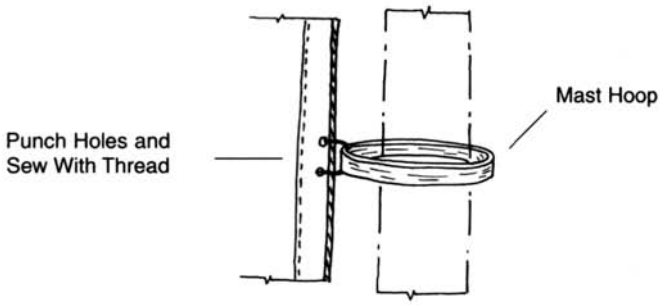


Fig.9-3 Sewing Mast Hoops



5. Flag Halliards

Both topmasts and the main gaff have flag halliard.

FINAL TOUCHES

When the model is rigged, recheck every line and make sure the seizings are sound. If necessary, add another dab of glue. Touch up shiny spots on standing rigging with black paint or black liquid shoe polish. Use a tan stain or brown liquid shoe polish for running rigging. Check if any painted wooden parts were fouled during the rigging process and make repairs.

Congratulations

Bluenose is finished! Take a moment to revel in your accomplishment. You've persevered when the going became rough and your effort has produced results. You've developed skills you never knew you had, increased your vocabulary, and become a time traveler. We hope you've enjoyed your voyage and look forward to sailing with you on your next shipmodeling project.

RIGGING LINE DIAMETERS

.10mm (.004")

.20mm (.008")

.25mm (.010")

.40mm (.016")

.50mm (.020")

.60mm (.024")

.75mm (.030")

.80mm (.032")

.90mm (.035")

.95mm (.037")

1.00mm (.039")

1.20mm (.047")

1.25mm (.049")

1.30mm (.051")

1.50mm (.059")

1.60mm (.063")

1.70mm (.067")

1.75mm (.069")

2.00mm (.079")

2.50mm (.098")

FORMULAS FOR CONVERTING MILLIMETERS AND INCHES

1 mm = .03937 of an inch

To find tenths of an inch:
.03937" x mms = tenths of an inch

To find mms from tenths of an inch:
Tenths of an inch ÷ .03937" = mms

Bibliography

1. *Bluenose*, by Brian and Phil Backman. Toronto: McClelland and Stewart, 1965.

Probably the best book on *Bluenose* and a major reference for Model Shipways' kit. W. R. MacAskill's photos of the ship sailing are outstanding. Also has photos of *Bluenose* II.

2. *Schooner Bluenose*, by Andrew Merkel. Toronto: Ryson Press, 1948.

Original photos by W. R. MacAskill (later duplicated in Backman's *Bluenose*). Good text.

3. *The Frigate Constitution and Other Historic Ships*, by F. Alexander Magoun. Salem: Marine Research Society, 1928. Reprinted by Dover Publications in 1987.

Contains a history of fishing schooners and plans developed from *Bluenose's* original design drawings. However, they do not reflect *Bluenose* as built. Good photo of the ship under sail.

4. *American Fishing Schooners*, 1825-1935, by Howard Chapelle. New York: W. W. Norton, 1973.

Contains Chapelle's *Bluenose* hull lines and sail plan plus a wealth of details on fishing schooner construction and rigging.

5. *American Fishermen*, by Albert Cook Church. New York: W. W. Norton, 1940.

Many photos of *Bluenose* in races with Gloucester fishermen and closeup bow and stern views.

6. *Thomas F. McManus and the American Fishing Schooners–An Irish-American Success Story*, by W. M. P. Dunne. Mystic: Mystic Seaport Museum, 1994.

Some *Bluenose* photos and an account of the International Fishing Schooner Races.

Museums

The Fisheries Museum of the Atlantic, Lunenburg, Nova Scotia, Canada

One of 25 Nova Scotia museums with *Bluenose* exhibits. Also has some original *Bluenose* plans.

Mariner's Museum, Newport News, Virginia

Research library has most of the books published on *Bluenose* plus several good photographs of deck layout and the ship under sail.

SCALE CONVERSION TABLE

RIGGING

Diameters for Lifesize Vessel	Diameters in Tenths of an Inch	Diameters Converted to 3/16" Scale Inches in 10ths ÷ 64=
5/16"	.3125"	.005" (.12mm)
3/8"	.375"	.006" (.15mm)
1/2"	.5"	.008" (.20mm)
5/8"	.625"	.009" (.25mm)
3/4"	.75"	.012" (.30mm)
7/8"	.875"	.014" (.35mm)
1"	1"	.016" (.40mm)
1-1/4"	1.25"	.020" (.50mm)

BLOCKS

Lengths for Lifesize Vessel	Lengths Converted to 3/16" Scale Inches in 10ths ÷ 64=
4"	.06" (1.52mm or 1/16")
5"	.08" (2.03mm or 5/64")
6"	.09" (2.28mm or 3/32")
7"	.10"(2.54mm or 7/64")
8"	.13" (3.18mm or 1/8")
10"	.16" (4.06mm or 5/32")
12"	.19" (4.83mm or 3/16")

MODELER'S LOG

Date	Time	Notes

MODELER'S LOG

Date	Time	Notes

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Date	Time	Notes

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When done, iron the sails. Be careful not to burn them. Next, cut the sail shape using Line A in Figure 7-4. Fold the hem, iron it flat, and sew as close to Line B as possible. Tuck the ends and hand stitch the corners. The sail is ready for stretching.

Sewing Aids: Visit a fabric shop and purchase a bottle of Fray-Chek. Running or brushing it along the edge of the cloth prevents the material from unraveling when cut and produces a sharp edge. Apply it to the sail before rolling the hem.

Stitch-Witchery and Wonder-Under are basically the same product. They are heat fusible bonding tapes. Stitch-Witchery comes in a roll and is bond sensitive on both sides. To join two pieces, simply place a strip between them and iron.

Wonder-Under comes in sheets with a thin, paper backing on one side. This material is useful for bonding letters and numbers to a scale sailboat's sail. First, buy the colored fabric for the numbers. Place the Wonder-Under sheet on the cloth with the paper backing up. Iron the sheet to bond it to the material. Next, cut out the letters, numbers, logo, or whatever with scissors or a sharp blade. Peel off the paper backing, position the letter on the sail, and iron. This technique also works for making flags from colored cloth.

When racing, *Bluenose's* mainsail carried an arabic "1" or "2" near its head.

Stretching the Sails: This step assures the sail's proper shape, since sewing may have altered it. Using the original pattern, trace the sail's outline onto a piece of paper. Place the paper on a solid, but porous backing, such as a wood or cork board. Now wash the sail again and lay it over the outline. Stretch the wet material to the sail's outline, then secure with stick pins through its outer edges. When dry, the sail will have resumed its proper shape. Iron it one more time.

Boltropes and Reef Points: Boltropes can be omitted, since they are nearly invisible at 3/16" scale. However, to include them, follow the tedious method in Figure 7-4. The sketch also shows how to install reef points.

Furled Sails: Don't furl sails made from sailcloth and cut to the original's scale size. The material is usually too heavy, resulting in a bulky furled sail. To solve this problem, either proportionally reduce the size of a sail by one-third when using sailcloth (Figure 7-5), or buy a lighter material such as Silkspan (model airplane covering tissue). Depending on their size, even Silkspan sails may require being reduced by one-third. Test the percentage reduction to determine how much material is needed for a neat, tight furl.

Even furled sails need some seams and hems, as these details are visible.

9. Rigging the Model Without Sails

Include most of the lines, such as halliards and downhauls, that remain when sails are removed. These are shackled together, tied off, or secured to some other stowage point. Sketches here and on the plans show some details.

Standing Rigging

Standing rigging is black. Before starting, sort lines by size, coat with beeswax, and keep them handy. Use cotton, silk, or nylon thread for seizings. Treat this with beeswax. Keep white glue at the ready for dabbing on a seizing if necessary. Usually sewing through the shroud followed by a half hitch will prevent a seizing from unraveling.

Shackles: These are difficult to make at 3/16" scale, so substitute a split ring.

1. Shrouds

Begin the standing rigging by making the lower shroud chain plates from brass strip (Figure 8-1).

The lower shrouds are set up in pairs (Figure 8-2). To do this, make a temporary brass wire fixture to space the deadeyes as seizing progresses (Figure 8-3). The fixture should be longer than the final spacing of deadeyes. Reeving the lanyards will tighten the shrouds to their final proper spacing. Make a test shroud first to see how much it stretches.

Figure 8-3 also shows the sequence for reeving lanyards. When looking outboard at any deadeye, always start with a knot in the upper left-hand deadeye hole. Consequently, port deadeyes have the knot aft and starboard deadeyes have it forward. Keep an eye on the masts. Rigging the shrouds can pull them out of alignment.

Note: The upper deadeyes (laser cut) on the lower shrouds are oval. On the real vessel, wire rigging is spliced just above the upper deadeyes. Wrap thread around the shrouds to simulate the splice.

Shrouds for the fore and main topmast run through spreaders, then set up at the hull. They have smaller deadeyes.

Main topmast shrouds start at the spreaders and set up to futtock shrouds (Figure 8-4). Make the futtock shrouds from brass wire.

Spreader lifts replace the fore topmast shrouds (Figure 8-5).

Once the shrouds are up, add the ratlines (Figure 8-6). Make the sheer pole from brass wire, then paint it.

Before installing the ratlines, give them a generous coating of beeswax. This will help hold them in a slight downward curve. If the ratlines tend to bow up, tug them gently into position. Touching the loops with white glue will help freeze them. Ratlines are difficult to do if tied with clove hitches. Use half hitches and avoid pulling the ratlines too tight, thereby altering the spacing between shrouds. The step or space between ratlines should be a scale 14 to 15 inches.

Note: Ratlines on the upper main topmast shrouds do not extend to the top, so a crew member can furl topsails at the lower masthead.

2. Fore & Aft Stays

Install the fore and aft stays unless an optional method was selected. Be careful not to pull the masts out of alignment. Begin with the forward lower stays and work aft and up.

The jumbo jib stay sets to a bail bolted to the deck. Make it from brass wire (Figure 8-7). The jib and balloon stay belay to fittings on the bowsprit.

The pullback stay and main topmast stay have a lanyard at one end to tighten the stay. While details heighten a model's appearance, these lanyards can be omitted and the stays simply seized to the fitting. The spring stay has an eye splice at both ends. It belays to the bails.

Topmast Flying Backstays: During races, a port and starboard main topmast flying backstay was rigged. Those who are building Bluenose in this configuration can install one backstay tight and the other slack.

3. Bowsprit Rigging

Backropes, guys, and bobstays are tightened with turnbuckles. Make them from brass (Figure 8-8), along with the bobstay and guy plates (Figure 8-9).

4. Footropes

The bowsprit has footropes and stirrups, but the main boom just has footropes. Apply a heavy coat of beeswax to coax these lines into pleasing curves. Freeze them with a touch of white glue if necessary. Footropes that don't droop properly look awful.

5. Running Lights
Glue the britannia running lights to a flat piece of stripwood, then attach the board to the fore shrouds (Figure 8-10).

Take another look before moving on. Check that a mast wasn't pulled out of alignment. Now is the time to correct any mistakes.

Running Rigging

Decide whether to rig with or without sails or with a few furled. The following discusses the choices and how to rig them. Although the rigging sequence isn't critical, starting at the bow and working aft is recommended.

Attach as many lines as possible to sails or spars before mounting on the model. Play out enough line for reeving, handling, and belaying. Don't be in a hurry to snip them flush. They may need retensioning as rigging progresses.

Sheet 6 contains the belaying plan. Belay the line, then add a coil to each belaying point.

1. Jumbo Jib, Jib & Balloon Jib

Installing sails: Substitute split rings for hanks. Real hanks are difficult to make at 3/16" scale. Set sails either to port or starboard, but be consistent. It looks better.

Jib and Balloon Jib: Fit halliards and tacks tightly. Downhauls can be either tight or hung a little loose. Tighten the sheet on the sail side. The other sheet drapes over the stay and hangs loosely toward the belaying points. Again, apply a heavy coat of beeswax so these lines droop on command.

No sails: Bring down the halliard block with the downhaul attached (Figure 9-1). Sheets are removed with the sails or left lying on deck.

Jumbo Jib: Lace the sail to the boom by a method shown on the plans. Sheet and halliards set up tight.

Hook the topping lift to the end of the boom. However, because it also serves as a fish tackle (hoists anchors), it could hook to the eyebolt in the buffalo rail.

No sail: Set the boom in its crutch, tighten the sheet, and bring down the halliard block.

2. Staysail

Tighten the staysail's sheet, halliards, and tack. Notice the unique racing halliard. Install it or the simpler fishing halliard.

No sail: Bring the peak halliard block to the foremast and hook it to the throat

halliard (Figure 9-2). Remove the sheet and tack.

3. Fore & Main Topsails

Seized them to the mast hoops (Figure 9-3).

Fore Topsail: It has a double sheet and tack. Tighten one, then run the loose partner over the main topmast stay so the sail can be set on either side.

*Main Topsai*l: It always sets on the port side of the main peak halliards, but with the tack over the main gaff on the starboard side. This sail has one sheet and tack. The clewline feeds through fairleads and blocks.

No topsails: Hook the sheets to the halliard, bring them to the mast, and hook somewhere at the masthead.

4. Fore & Main Sails

Lace the sails to the boom and gaff and to the mast hoops. Note: Double hoops provide added strength near the boom. When in place, add the parrels to the main boom jaws and fore and main gaffs. The fore boom sets to a gooseneck.

*Foresai*l: Attach the boom tackle per the plans. Hook the topping lift to the end of the boom. Reeve the peak and throat halliards, then the sheet, and tighten in the correct position. Add the downhaul at the end of the gaff.
No sail: Rest the boom in its crutch. Lower the gaff on top of the boom and stack the mast hoops in a pile. Lash the gaff to the boom with short lines. Remember, peak and throat halliards are longer when the gaff is down, so play out plenty of line.

Although not usually done on real ships, one option is to leave the gaff up. Some modelers like to fill the space with something.

Mainsail: Rig the mainsail like the foresail except for the topping lifts. Port and starboard quarter lifts are primarily for racing. At mid height on them is a line functioning as a lazy jack (contains sail and keeps it off the deck when furling). The main topping lift is mostly for fishing, but has been used with the quarter lifts during races.

Baggywrinkle is on the main topping lift and quarter lifts. This fuzzed-up rope prevents chafing. Simulate it by gluing on some cotton or other material, then painting it to look like rope.

No sail: Lower the gaff, set the boom in its crutch, and add the crutch's port and starboard tackle. Note: The plans show two types of boom crutch tackle. Both could be used for fishing, but the chain version is more common.

5. Flag Halliards

Both topmasts and the main gaff have flag halliard

FINAL TOUCHES

When the model is rigged, recheck every line and make sure the seizings are sound. If necessary, add another dab of glue. Touch up shiny spots on standing rigging with black paint or black liquid shoe polish. Use a tan stain or brown liquid shoe polish for running rigging. Check if any painted wooden parts were fouled during the rigging process and make repairs.

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